1988
ALBERTA HOUSE COST COMPARISON STUDY

Executive Summary

Single Detached Dwelling
24 Unit
Walk-up Apartment

Alberta
MUNICIPAL AFFAIRS
Housing Division

1988 ALBERTA HOUSE COST COMPARISON STUDY

EXECUTIVE SUMMARY

SEPTEMBER 1988

Prepared by :

Helyar & Associates
#200 14727 - 87 Avenue
Edmonton, Alberta
T5R 4E5

Prepared for :

Alberta Municipal Affairs
Housing Division
Research and Development Section
2nd Floor, 9925 - 107 Street
Edmonton, Alberta
T5K 2H9

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PREFACE

The main purpose of the 1988 Alberta House Cost Comparison Study was to provide estimates of the hard construction costs of a prototypical single-detached dwelling and a 24 unit walk-up apartment in ten urban centres in this Province.

The study also compared 1988 residential construction costs with those of previous years in the selected urban centres. Most emphasis was given to a comparison of 1988 with 1987 costs and the study included an analysis of these differences.

The 1988 study was carried out by Helyar & Associates and is documented in three reports:

1988 Alberta House Cost Comparison Study : Executive Summary
1988 Alberta House Cost Comparison Study : Single-Detached Dwelling
1988 Alberta House Cost Comparison Study : Walk-Up Apartment

Additional copies of any of these reports can be ordered from :

ALBERTA MUNICIPAL AFFAIRS
Housing Division
Research and Development Section
2nd Floor, 9925 - 107 Street
Edmonton, Alberta
T5K 2H9

1.0 INTRODUCTION

1.0 INTRODUCTION

1.1 Objectives

The objectives of the 1988 Alberta House Cost Comparison Study were:

1. To determine 1988 hard residential construction costs in selected urban centres in Alberta.
2. To determine reasons for differences in residential construction costs in the selected centres.
3. To carry out detailed comparisons of 1988 residential construction costs with 1987 residential construction costs in the selected centres.
4. To determine and comment on residential construction cost trends over the last nine years in the selected centres.

1.2 Scope of Work

The 1988 Alberta House Cost Comparison Study examined the construction costs of a typical single-detached dwelling and a 24 unit walk-up apartment building.

The study has been documented in three reports : an Executive Summary, a report on a typical single-detached dwelling and a report on a walk-up apartment. This report is the Executive Summary.

The study examined building construction costs in the following centres:

1. Edmonton
2. Calgary
3. Red Deer
4. Fort McMurray
5. Grande Prairie
6. Hinton
7. Lethbridge
8. Medicine Hat
9. Lloydminster
10. Peace River

1.0 INTRODUCTION

1.2 Scope of Work (continued)

The cost analysis of both the single-detached dwelling and the walk-up apartment examined the building construction cost differences between each of the centres and identified the reasons for those differences with reference to such factors as :

a) material costs,
b) labour costs, and
c) building features and inclusions.

The cost estimates of the single-detached dwelling for each centre include all structural, finishing, mechanical, and electrical work as shown on the drawings and included in the specifications, and also include allowances for site overhead. The cost estimates exclude the following items :

a) cost of land and site clearance,
b) site servicing costs,
c) site development costs,
d) design fees and expenses,
e) legal fees and expenses,
f) marketing and real estate financing costs,
g) appliances (fridge and stove), and
h) general contractor's overhead and profit.

1.0 INTRODUCTION

1.2

Scope of Work (continued)

The cost estimates of the walk-up apartment for each centre include all structural, finishing, mechanical, and electrical work as shown on the drawings and included in the specifications, and also include allowances for site overhead and contractors'overhead and profit. The cost estimates exclude the following items:

a) cost of land and site clearance,
b) site servicing costs,
c) site development costs,
d) design fees and expenses,
e) legal fees and expenses, and
f) marketing and real estate financing costs.

1.3

Approach

The building construction costs are detailed in the report under the headings of labour and material/equipment costs. Labour rates used in the report are either those established by the trade union concerned, or by the market where trade union rates do not apply. In most cases, a realistic assessment of labour rates has been established by examining the circumstances of the particular sub-trade within the building industry. Material prices have been evaluated from building materials suppliers' lists. Average discounts are applied in order to establish a realistic market price for the materials to contractors.

1.0 INTRODUCTION

1.3 Approach (continued)

In previous years, the single-detached dwelling studied had been a bungalow 100 m2 (1,076 S.F.). The model analyzed in 1988 is a 4-level split, 151 m2 (1,625 S.F.) complete with a double attached garage and finished on three levels, which is more representative of current housing construction than the bungalow.

In order to compare costs and show a trend from previous years studies, previous years costs had to be adjusted to reflect the new model. Accordingly, costs for the previous years model were estimated concurrently with costs for the revised plan. It was found that costs per square foot were 6 percent higher on the 4-level split than the bungalow, reflecting the additional complexity and features of the new plan. Previous years costs were then recalculated by increasing the cost per square foot identified in previous years for the bungalow by 6 percent and applying this to the square footage of the new model. Costs for comparison can be found in the tables and graphs contained in this report.

The cost data are assembled by sub-trade and presented in 21 trade categories for the single-detached dwelling and 25 trade categories for the walk-up apartment. The sub-trade operations are combined within each trade category in order to reflect current estimating practice within the industry. Site overhead and general contractor's office overhead and profit are shown separately for the walk-up apartment to indicate the actual site costs.

A computer program was developed in order to collate and present the cost data which were assembled for the ten centres. The quantities and trade descriptions were initially established for the prototypical house and apartment building. The cost data applicable to the relevant quantities and trade descriptions for each centre were then processed by computer.

The cost effects of market forces and building industry conditions are addressed in the "Findings" section of this report.

1.0 INTRODUCTION

1.4 Findings

Alberta's economy experienced improvement in the first half of 1988. There was a positive migration of people into Alberta. Construction activity in the Province increased and the unemployment rate was down compared to the year previous. Increased housing starts province-wide proved indicative of a stabilizing economy. Timber pulp and paper projects have generated some activity, but the largest part of the impact from these projects has yet to come. Most areas of the Province have seen upward movement of housing prices although weaker performances took place in smaller communities. Lot prices are up in most of the centres studied as a result of a reduced supply of lower priced lots.

Costs for the prototypical single-detached house have increased by an average of 3.5% province-wide. The greatest increase was 6.3% shared by Edmonton and Lethbridge, and the lowest was 1.2% in Fort McMurray.

Although apartment vacancy rates remained high and the rental market was weak, costs for apartment construction increased in all centres by an average of 3.0%. The greatest increase was 4.7% in Edmonton and the smallest increase was 1.6% in Lloydminster.

The graphic presentation of construction costs of the single-detached dwelling in Table SD.7 indicates that construction costs in all centres have moved above 1981 nominal dollars (from an average 1981 cost of $ 67,692 to an average 1988 cost of $ 77,974 or 15.2% more. However, expressed in terms of inflation adjusted 1988 dollars, costs are still 15.5% below the 1981 average of $ 92,264 at $ 77,974.

The graphic presentation of apartment construction costs in Table WA.8 indicates that average costs are higher than 1981 costs expressed in nominal dollars (from $ 31,529 in 1981 to $ 32,604 in 1988 or 3.4% more). Expressed in inflation adjusted 1988 dollars, the total average costs are 24.1% less than the 1981 costs of $42,975 at $32,604 in 1988.

1.0 INTRODUCTION

1.4
Findings (continued)

Labour costs for the single-detached dwelling increased substantially in Edmonton and in Lethbridge as both centres have experienced shortages of skilled labour. Other centres have also experienced some skilled labour shortage problems, but to a much lesser degree.

Labour costs for apartment construction also increased substantially in Edmonton, Medicine Hat and significantly in Calgary as these centres experienced shortages in this field.

Material prices for the single-detached dwelling and the walk-up apartment building have increased in all centres, however, some prices used in this report may reflect seasonal adjustment such as the exclusion of costs of heating for concrete pouring in the winter and also greater discounting offered by suppliers for the time of year studied. Most materials have also increased in price in response to the overall high demand caused by the higher housing starts in the Province. Concrete prices continue to vary considerably from centre to centre, due to demand, location and availability of aggregates and cement. In most centres the majority of price increases were passed on to consumers ; in previous years, builders have absorbed increases to remain competitive in the marketplace.

No significant changes were observed as a result of building practice changes or changes in standard materials used by the majority of builders.

2.0 SUMMARY OF FINDINGS FOR THE SINGLE-DETACHED DWELLING

2.0 SUMMARY OF FINDINGS FOR THE SINGLE-DETACHED DWELLING

TABLE SD. 1 : Total Building Costs

ITEM	EDMONTON		CALGARY		RED DEER		FORT McMURRAY		GRANDE PRAIRIE		HINTON		LETHBRIDGE		MEDICINE HAT		LLOYDMINSTER		PEACE RIVER *	
ELEMENT	TOTAL $	%	TOTAL $	%	TOTAL $	%	TOTAL $	%	TOTAL $	%	TOTAL $	%	TOTAL $	%	TOTAL $	%	TOTAL $	%	TOTAL $	%
Labour	20,063	28.0	22,089	28.7	21,306	28.1	24,554	28.8	22,973	28.3	22,587	28.8	21,291	28.0	21,187	27.8	20,867	27.3	23,427	28.5
Material	51,603	72.0	54,762	71.3	54,448	71.9	60,583	71.2	58,077	71.7	55,955	71.2	54,740	72.0	55,045	72.2	55,534	72.7	58,653	71.5
Total 1988	71,666	100.0	76,851	100.0	75,754	100.0	85,137	100.0	81,050	100.0	78,542	100.0	76,031	100.0	76,232	100.0	76,401	100.0	82,080	100.0
Cost per m2	$474.61		$508.95		$501.68		$563.82		$536.75		$520.15		$503.52		$504.85		$505.97		$543.58	
Cost per SF	$44.09		$47.28		$46.61		$52.38		$49.87		$48.32		$46.78		$46.90		$47.01		[redacted]	
1987 Split - Level **	$41.49		$45.90		$45.15		$51.76		$47.91		$46.69		$44.01		$44.40		$46.10		-	
Total 1987 **	$67,421		$74,588		$73,369		$84,110		$77,854		$75,871		$71,516		$72,150		$74,913		-	
Changes From 1987	6.3%		3.0%		3.3%		1.2%		4.1%		3.5%		6.3%		5.7%		2.0%		-	

* Peace River was not included in previous years studies.

** Adjusted to apply to the split-level model used in the 1988 study instead of the bungalow as studied in previous years reports.

Note : Several total figures may appear in this report as not being added correctly. This is due to the rounding effect in the calculations of the detail costing for each centre.

2.0 SUMMARY OF FINDINGS FOR THE SINGLE-DETACHED DWELLING

TABLE SD. 2 : Comparative Cost Ratios *

LOCATION	EDMONTON	CALGARY	RED DEER	FORT McMURRAY	GRANDE PRAIRIE	HINTON	LETHBRIDGE	MEDICINE HAT	LLOYD-MINSTER	PEACE RIVER
EDMONTON	1.00	1.07	1.06	1.19	1.13	1.10	1.06	1.06	1.07	1.15
CALGARY	0.93	1.00	0.99	1.11	1.06	1.02	0.99	0.99	0.99	1.07
RED DEER	0.95	1.01	1.00	1.12	1.07	1.04	1.00	1.01	1.01	1.08
FORT McMURRAY	0.84	0.90	0.89	1.00	0.95	0.92	0.89	0.90	0.90	0.96
GRANDE PRAIRIE	0.88	0.95	0.94	1.05	1.00	0.97	0.94	0.94	0.94	1.01
HINTON	0.91	0.98	0.97	1.08	1.03	1.00	0.97	0.97	0.97	1.05
LETHBRIDGE	0.94	1.01	1.00	1.12	1.07	1.03	1.00	1.00	1.01	1.08
MEDICINE HAT	0.94	1.01	0.99	1.12	1.06	1.03	1.00	1.00	1.00	1.08
LLOYD-MINSTER	0.94	1.01	0.99	1.11	1.06	1.03	1.00	1.00	1.00	1.07
PEACE RIVER	0.87	0.94	0.92	1.04	0.99	0.96	0.93	0.93	0.93	1.00

* Entries refer to the ratio of the price for a city in the top row of the table divided by a price for the city listed in the column. For example, Red Deer costs are 1.06 times Edmonton costs.

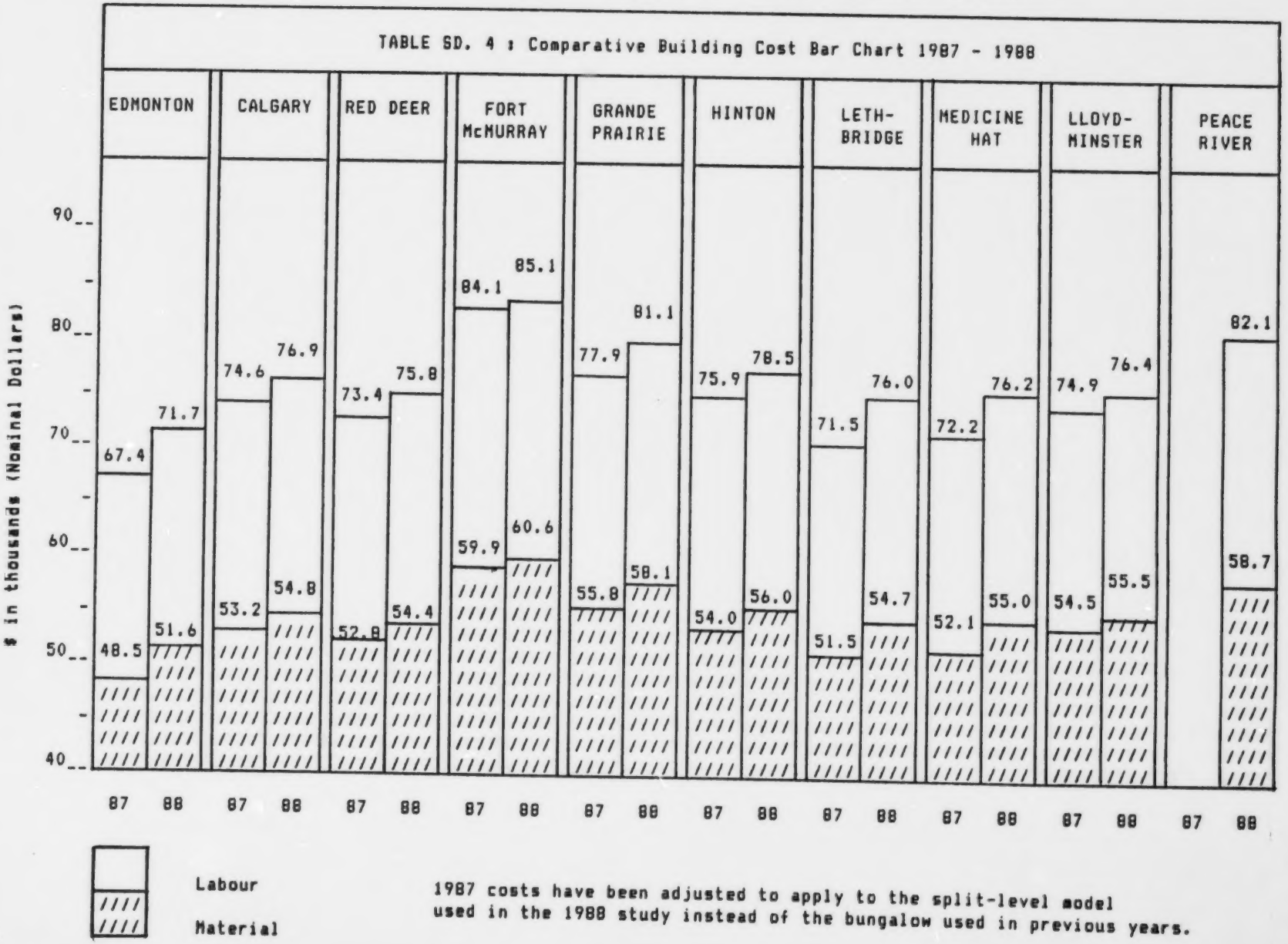
2.0 SUMMARY OF FINDINGS FOR THE SINGLE-DETACHED DWELLING

TABLE SD. 3 : Comparative Cost Table 1987 - 1988

LOCATION	EDMONTON	CALGARY	RED DEER	FORT McMURRAY	GRANDE PRAIRIE	HINTON	LETHBRIDGE	MEDICINE HAT	LLOYD-MINSTER	PEACE RIVER
Labour Cost										
1988	$20,063	$22,089	$21,306	$24,554	$22,973	$22,587	$21,291	$21,187	$20,867	$23,427
1987 *	$18,878	$21,407	$20,617	$24,224	$22,033	$21,851	$20,024	$20,058	$20,451	NA
Difference	1185	682	689	330	940	736	1267	1129	416	NA
% Difference	6.3%	3.2%	3.3%	1.4%	4.3%	3.4%	6.3%	5.6%	2.0%	NA
Mat'l Cost										
1988	$51,603	$54,762	$54,448	$60,583	$58,077	$55,955	$54,740	$55,045	$55,534	$58,653
1987 *	$48,543	$53,181	$52,752	$59,886	$55,821	$54,020	$51,492	$52,092	$54,462	NA
Difference	3060	1581	1696	697	2256	1935	3248	2953	1072	NA
% Difference	6.3%	3.0%	3.2%	1.2%	4.0%	3.6%	6.3%	5.7%	2.0%	NA
Total Cost										
1988	$71, 66	$76,851	$75,754	$85,137	$81,050	$78,542	$76,031	$76,232	$76,401	$82,080
1987 *	$67,421	$74,588	$73,369	$84,110	$77,854	$75,871	$71,516	$72,150	$74,913	NA
Difference	4245	2263	2385	1027	3196	2671	4515	4082	1488	NA
% Difference	6.3%	3.0%	3.3%	1.2%	4.1%	3.5%	6.3%	5.7%	2.0%	NA

* Cost adjusted to apply to the split-level model used in the 1988 study instead of the bungalow used in previous years.

2.0 SUMMARY OF FINDINGS FOR THE SINGLE - DETACHED DWELLING



1987 costs have been adjusted to apply to the split-level model used in the 1988 study instead of the bungalow used in previous years.

2.0 SUMMARY OF FINDINGS FOR THE SINGLE-DETACHED DWELLING

TABLE SD. 5 : Comparative Total Building Costs 1980 -1988 *

YEAR	AVERAGE	EDMONTON	CALGARY	RED DEER	FORT McMURRAY	GRANDE PRAIRIE	** HINTON	LETHBRIDGE	MEDICINE HAT	*** LLOYD-MINSTER	**** PEACE RIVER
1980	$62,391	$57,979	$55,947	$59,530	$73,206	$67,436	-	$60,890	$61,752	-	-
1981	$67,692	$63,888	$63,336	$64,249	$77,357	$71,449	-	$67,057	$66,506	-	-
1982	$65,632	$60,374	$59,030	$64,697	$74,016	$65,145	$67,935	$66,489	$67,367	-	-
1983	$61,713	$57,170	$55,930	$59,116	$68,848	$64,732	$63,491	$61,493	$62,923	-	-
1984	$63,646	$57,256	$56,877	$58,496	$72,242	$68,194	$66,316	$62,010	$63,629	$67,798	-
1985	$64,852	$59,633	$59,754	$61,407	$72,913	$68,469	$66,661	$63,181	$63,250	$68,400	-
1986	$67,405	$62,079	$61,803	$63,733	$76,445	$71,932	$70,209	$65,231	$65,524	$69,692	-
1987	$74,644	$67,421	$74,588	$73,369	$84,110	$77,854	$75,871	$71,516	$72,150	$74,913	-
1988	$77,974	$71,666	$76,851	$75,754	$85,137	$81,050	$78,542	$76,031	$76,232	$76,401	$82,080

Notes :
- * Expressed in nominal dollars
- ** Hinton was not included in the 1980 and 1981 studies
- *** Lloydminster was not included in the 1980 through 1983 studies
- **** Peace River was not included in the 1980 through 1987 studies
- >>>> Costs for years prior to 1988 have been adjusted to apply to the split-level model used in the 1988 study instead of the bungalow used in previous years.

2.0 SUMMARY OF FINDINGS FOR THE SINGLE-DETACHED DWELLING

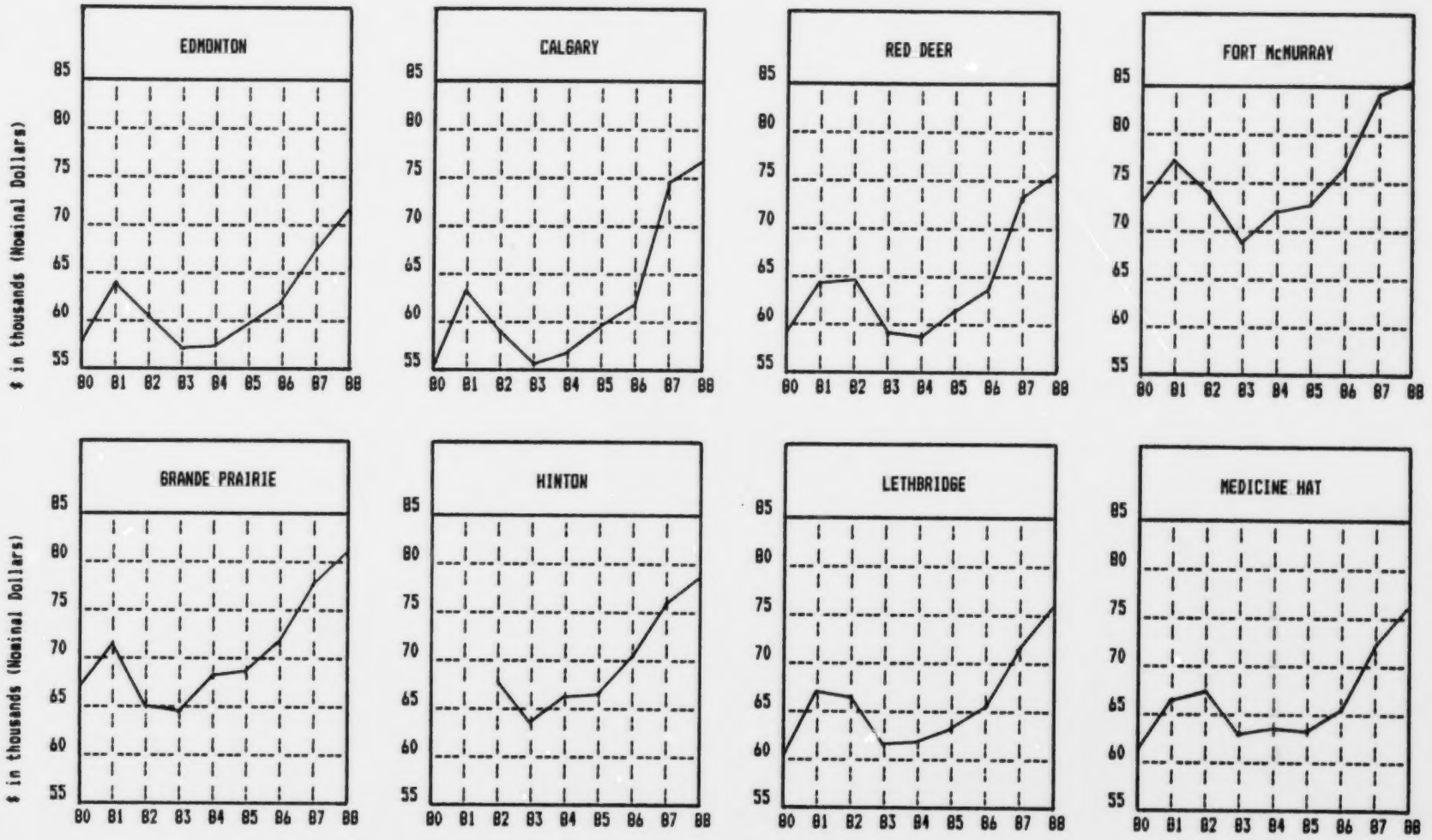
TABLE SD. 6 : Comparative Cost per Square Foot of Gross Floor Area 1980 - 1988 *

YEAR	AVERAGE	EDMONTON	CALGARY	RED DEER	FORT McMURRAY	GRANDE PRAIRIE	** HINTON	LETHBRIDGE	MEDICINE HAT	*** LLOYD-MINSTER	**** PEACE RIVER
1980	$38.39	$35.68	$34.43	$36.63	$45.05	$41.50	-	$37.47	$38.00	-	-
1981	$41.66	$39.32	$38.98	$39.54	$47.60	$43.97	-	$41.27	$40.93	-	-
1982	$40.39	$37.15	$36.33	$39.81	$45.55	$40.09	$41.81	$40.92	$41.46	-	-
1983	$37.98	$35.18	$34.42	$36.38	$42.37	$39.83	$39.07	$37.84	$38.72	-	-
1984	$39.17	$35.23	$35.00	$36.00	$44.46	$41.97	$40.81	$38.16	$39.16	$41.72	-
1985	$39.91	$36.70	$36.77	$37.79	$44.87	$42.14	$41.02	$38.88	$38.92	$42.09	-
1986	$41.48	$38.20	$38.03	$39.22	$47.04	$44.27	$43.21	$40.14	$40.32	$42.89	-
1987	$45.93	$41.49	$45.90	$45.15	$51.76	$47.91	$46.69	$44.01	$44.40	$46.10	-
1988	$47.97	$44.09	$47.28	$46.61	$52.38	$49.87	$48.32	$46.78	$46.90	$47.01	$50.50

Notes : * Expressed in nominal dollars
** Hinton was not included in the 1980 and 1981 studies
*** Lloydminster was not included in the 1980 through 1983 studies
**** Peace River was not included in the 1980 through 1987 studies
>>>> Costs for years prior to 1988 have been adjusted to apply to the split-level model used in the 1988 study instead of the bungalow used in previous years.

2.0 SUMMARY OF FINDINGS FOR THE SINGLE-DETACHED DWELLING

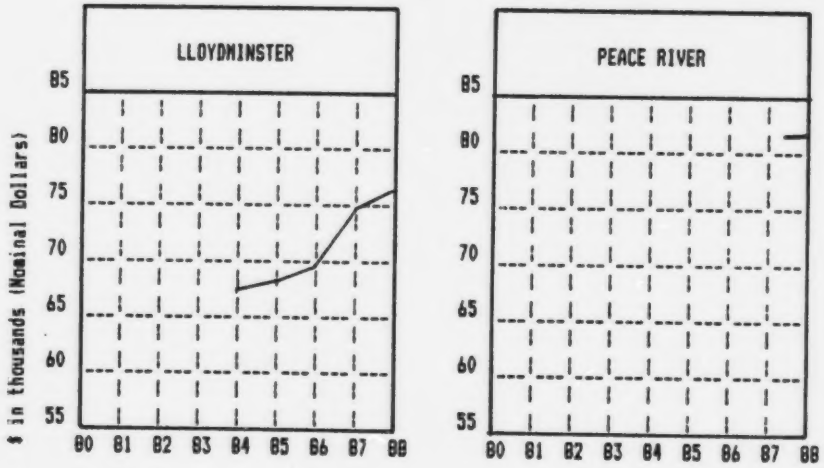
TABLE SD. 7 : Comparative Total Cost Graphs 1980 -1988



Note: Costs for years prior to 1988 have been adjusted to apply to the split-level model used in the 1988 study instead of the bungalow used in previous years.

2.0 SUMMARY OF FINDINGS FOR THE SINGLE-DETACHED DWELLING

TABLE SD. 7 : Comparative Total Cost Graphs 1980 -1988 (Continued)



* Peace River not included in previous studies.

Note: Costs for years prior to 1988 have been adjusted to apply to the split-level model used in the 1988 study instead of the bungalow used in previous years.

2.0 SUMMARY OF FINDINGS FOR THE SINGLE-DETACHED DWELLING

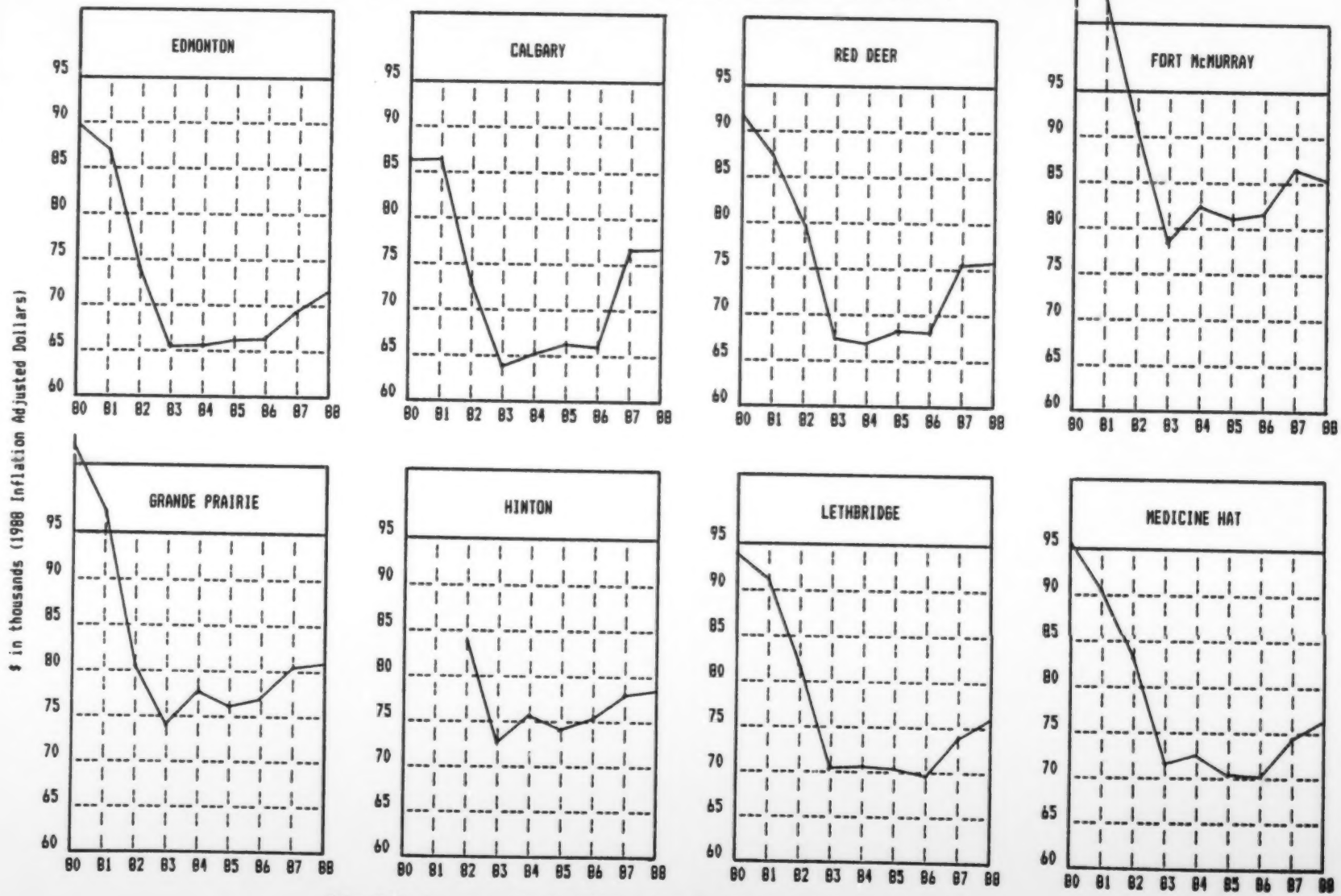
TABLE SD. 8 : Comparative Total Building Costs 1980 -1988 (Inflation Adjusted Dollars) *

YEAR	AVERAGE	EDMONTON	CALGARY	RED DEER	FORT McMURRAY	GRANDE PRAIRIE	** HINTON	LETHBRIDGE	MEDICINE HAT	*** LLOYD-MINSTER	**** PEACE RIVER
1980	$96,208	$89,404	$86,270	$91,795	$112,884	$103,986	-	$93,892	$95,222	-	-
1981	$92,264	$87,079	$86,327	$87,571	$105,438	$97,385	-	$91,399	$90,648	-	-
1982	$80,924	$74,441	$72,784	$79,771	$91,262	$80,324	$83,764	$81,981	$83,064	-	-
1983	$70,538	$65,345	$63,928	$67,570	$78,693	$73,989	$72,570	$70,287	$71,921	-	-
1984	$72,748	$65,444	$65,010	$66,861	$82,573	$77,946	$75,799	$70,877	$72,728	$77,493	-
1985	$72,115	$66,312	$66,446	$68,285	$81,079	$76,138	$74,127	$70,257	$70,334	$76,061	-
1986	$72,124	$66,425	$66,129	$68,194	$81,796	$76,967	$75,124	$69,797	$70,111	$74,570	-
1987	$76,883	$69,444	$76,826	$75,570	$86,633	$80,190	$78,147	$73,661	$74,315	$77,160	-
1988	$77,974	$71,666	$76,851	$75,754	$85,137	$81,050	$78,542	$76,031	$76,232	$76,401	$82,080

Notes :
* 1. Expressed in 1988 Inflation adjusted dollars
2. Inflation adjustments have been based on the Consumer Price Index for Edmonton and Calgary.
** Hinton was not included in the 1980 and 1981 studies
*** Lloydminster was not included in the 1980 through 1983 studies
**** Peace River was not included in the 1980 through 1987 studies
>>>> Costs for years prior to 1988 have been adjusted to apply to the split-level model used in the 1988 study instead of the bungalow used in previous years.

2.0 SUMMARY OF FINDINGS FOR THE SINGLE-DETACHED DWELLING

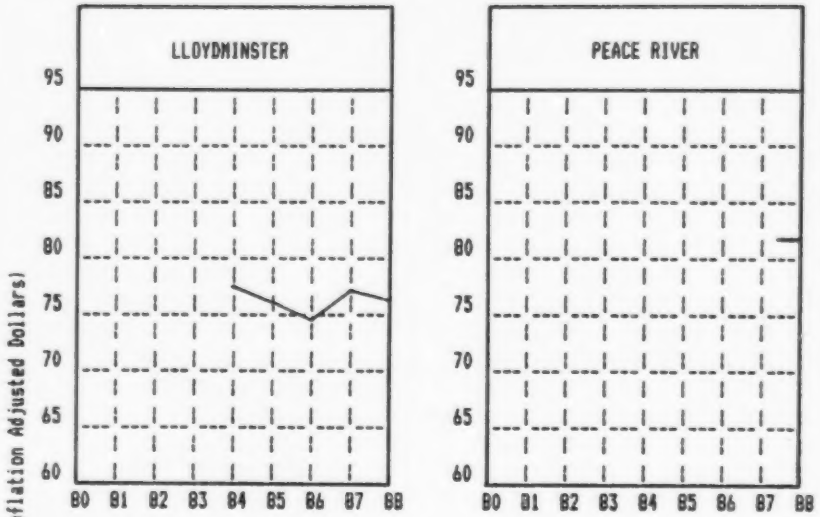
TABLE SD. 9 : Comparative Total Building Cost Graphs 1980 -1988 (Inflation Adjusted Dollars)



Note: Costs for years prior to 1988 have been adjusted to apply to the split-level model used in the 1988 study instead of the bungalow used in previous years.

2.0 SUMMARY OF FINDINGS FOR THE SINGLE-DETACHED DWELLING

TABLE SD. 9 : Comparative Total Building Cost Graphs 1980 -1988 (Inflation Adjusted Dollars)



* Peace River not included in previous studies.

Note: Costs for years prior to 1988 have been adjusted to apply to the split-level model used in the 1988 study instead of the bungalow used in previous years.

2.0 SUMMARY OF FINDINGS FOR THE SINGLE-DETACHED DWELLING

TABLE SD. 10 : Trade Division Cost Summaries

LOCATION	EDMONTON	CALGARY	RED DEER	FORT McMURRAY	GRANDE PRAIRIE	HINTON	LETHBRIDGE	MEDICINE HAT	LLOYD-MINSTER	PEACE RIVER
Divisions										
1. Excavation	2,642	3,309	3,329	3,726	3,076	2,874	3,277	2,995	3,445	3,098
2. Concrete	9,158	9,469	9,624	11,452	10,991	10,966	9,855	10,540	10,196	10,230
3. Damproofing	376	454	474	618	582	463	470	456	445	582
4. Siding	5,248	5,484	5,950	6,128	5,939	5,480	5,321	5,302	5,594	6,073
5. Roofing	1,713	1,857	1,836	1,840	1,889	1,670	1,744	1,790	1,574	1,960
6. Rough Carpentry	12,916	13,660	12,962	15,324	14,107	14,158	13,725	12,688	12,949	14,445
7. Finish Carpentry	1,929	2,084	1,914	2,186	2,006	1,923	1,944	1,911	1,956	2,091
8. Windows and Glazing	2,481	2,526	2,588	2,726	2,696	2,481	2,474	2,526	2,544	2,845
9. Sealants	59	73	63	67	68	60	59	62	60	68
10. Doors	3,074	3,182	3,257	3,565	3,593	3,355	3,221	3,195	3,352	3,660
11. Hardware	386	407	390	434	406	393	418	408	396	411
SUB - TOTAL	$39,982	$42,505	$42,387	$48,066	$45,353	$43,823	$42,508	$41,873	$42,511	$45,463

2.0 SUMMARY OF FINDINGS FOR THE SINGLE-DETACHED DWELLING

TABLE SD. 10 : Trade Division Cost Summaries (cont'd)

LOCATION	EDMONTON	CALGARY	RED DEER	FORT McMURRAY	GRANDE PRAIRIE	HINTON	LETHBRIDGE	MEDICINE HAT	LLOYD-MINSTER	PEACE RIVER
Divisions										
13. Wallboard	4,978	5,461	5,013	6,184	5,779	5,658	5,193	5,219	5,626	5,856
14. Flooring	3,253	3,460	3,399	3,490	3,687	3,341	3,275	3,465	3,374	3,781
15. Painting	2,192	2,414	2,366	2,693	2,659	2,518	2,568	2,575	2,524	2,676
16. Fittings	3,990	4,262	4,248	4,831	4,407	4,322	4,535	4,428	4,304	4,814
17. Specialties	540	576	550	607	598	553	584	584	557	613
18. Appliances	106	123	111	131	132	117	128	128	120	132
19. Plumbing	5,350	5,950	5,650	6,260	5,925	5,790	5,360	5,475	5,350	6,125
20. Heating	2,400	2,670	2,690	3,245	3,060	2,960	2,460	2,840	2,730	3,170
21. Electrical	3,375	3,930	3,840	4,130	3,950	3,960	3,920	4,145	3,805	3,950
22. Site Overhead	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500
TOTAL	$71,666	$76,851	$75,754	$85,137	$81,050	$78,542	$76,031	$76,232	$76,401	$82,080

2.0 SUMMARY OF FINDINGS FOR THE WALK-UP APARTMENT

2.0 SUMMARY OF FINDINGS FOR THE WALK-UP APARTMENT

TABLE NA. 1 : Total Building Costs

ITEM	EDMONTON		CALGARY		RED DEER		FORT McMURRAY		GRANDE PRAIRIE		HINTON		LETHBRIDGE		MEDICINE HAT		LLOYDMINSTER		* PEACE RIVER	
ELEMENT	TOTAL $	%	TOTAL $	%	TOTAL $	%	TOTAL $	%	TOTAL $	%	TOTAL $	%	TOTAL $	%	TOTAL $	%	TOTAL $	%	TOTAL $	%
Labour	253,906	35.0	265,108	35.6	264,349	35.4	308,027	36.3	296,731	36.2	282,472	35.3	266,530	35.4	269,116	35.5	281,377	35.6	301,150	36.0
Material	472,076	65.0	479,312	64.4	483,106	64.6	539,808	63.7	523,314	63.8	517,507	64.7	487,009	64.6	489,332	64.5	508,726	64.4	535,974	64.0
Total 1988	725,982	100.0	744,420	100.0	747,455	100.0	847,835	100.0	820,045	100.0	799,979	100.0	753,539	100.0	758,448	100.0	790,103	100.0	837,124	100.0
Cost per m2	$390.94		$400.87		$402.51		$456.56		$441.60		$430.79		$405.78		$408.43		$425.47		$450.79	
Cost per SF	$36.32		$37.24		$37.39		$42.42		$41.03		$40.02		$37.70		$37.94		$39.53		$41.88	
Total per Apt. 1988 $	$30,249		$31,018		$31,144		$35,326		$34,169		$33,332		$31,397		$31,602		$32,921		$34,880	
Total 1987 $	693,517		724,502		734,041		830,902		791,155		776,523		728,692		731,429		777,454		-	
Total per Apt. 1987 $	28,897		30,188		30,585		34,621		32,965		32,355		30,362		30,476		32,394		-	
Changes From 1987	4.7%		2.7%		1.8%		2.0%		3.7%		3.0%		3.4%		3.7%		1.6%		-	

* Peace River was not included in previous years studies.

Note : Several total figures may appear in this report as not being added correctly. This is due to the rounding effect in the calculations of the detail costing for each centre.

2.0 SUMMARY OF FINDINGS FOR THE WALK-UP APARTMENT

TABLE WA. 2 : Comparative Cost Ratios *

LOCATION	EDMONTON	CALGARY	RED DEER	FORT McMURRAY	GRANDE PRAIRIE	HINTON	LETHBRIDGE	MEDICINE HAT	LLOYD-MINSTER	PEACE RIVER
EDMONTON	1.00	1.03	1.03	1.17	1.13	1.10	1.04	1.05	1.09	1.15
CALGARY	0.98	1.00	1.00	1.14	1.10	1.08	1.01	1.02	1.06	1.13
RED DEER	0.97	1.00	1.00	1.14	1.10	1.07	1.01	1.02	1.06	1.12
FORT McMURRAY	0.86	0.88	0.88	1.00	0.97	0.94	0.89	0.89	0.93	0.99
GRANDE PRAIRIE	0.89	0.91	0.91	1.03	1.00	0.98	0.92	0.93	0.96	1.02
HINTON	0.91	0.93	0.93	1.06	1.03	1.00	0.94	0.95	0.99	1.05
LETHBRIDGE	0.96	0.99	0.99	1.13	1.09	1.06	1.00	1.01	1.05	1.11
MEDICINE HAT	0.96	0.98	0.99	1.12	1.08	1.06	0.99	1.00	1.04	1.10
LLOYD-MINSTER	0.92	0.94	0.95	1.07	1.04	1.01	0.95	0.96	1.00	1.06
PEACE RIVER	0.87	0.89	0.89	1.01	0.98	0.96	0.90	0.91	0.94	1.00

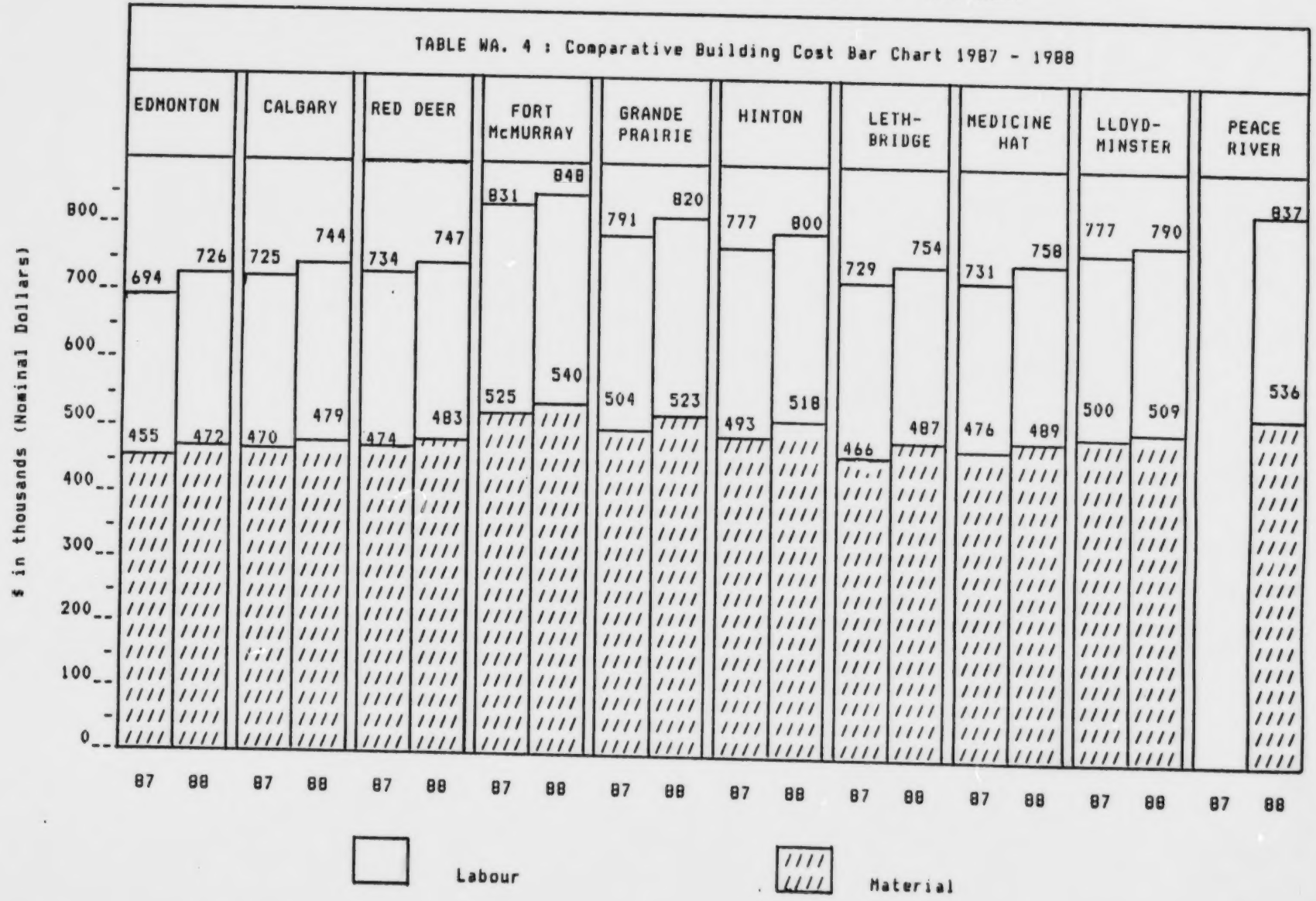
* Entries refer to the ratio of the price for a city in the top row of the table divided by a price for the city listed in the column. For example, Red Deer costs are 1.03 times Edmonton costs.

2.0 SUMMARY OF FINDINGS FOR THE WALK-UP APARTMENT

TABLE WA. 3 : Comparative Cost Table 1987 - 1988

LOCATION	EDMONTON	CALGARY	RED DEER	FORT McMURRAY	GRANDE PRAIRIE	HINTON	LETHBRIDGE	MEDICINE HAT	LLOYD-MINSTER	PEACE RIVER
Labour Cost										
1988	$253,906	$265,108	$264,349	$308,027	$296,731	$282,472	$266,530	$269,116	$281,377	$301,150
1987	$238,792	$254,433	$260,177	$305,499	$286,803	$283,222	$262,741	$255,350	$277,310	NA
Difference	$15,114	$10,675	$4,172	$2,528	$9,928	($750)	$3,789	$13,766	$4,067	NA
% Difference	6.3%	4.2%	1.6%	0.8%	3.5%	-0.3%	1.4%	5.4%	1.5%	NA
Mat'l Cost										
1988	$472,076	$479,312	$483,106	$539,808	$523,314	$517,507	$487,009	$489,332	$508,726	$535,974
1987	$454,724	$470,068	$473,862	$525,402	$504,352	$493,300	$465,953	$476,078	$500,148	NA
Difference	$17,352	$9,244	$9,244	$14,406	$18,962	$24,207	$21,056	$13,254	$8,578	NA
% Difference	3.8%	2.0%	2.0%	2.7%	3.8%	4.9%	4.5%	2.8%	1.7%	NA
Total Cost										
1988	$725,982	$744,420	$747,455	$847,835	$820,045	$799,979	$753,539	$758,448	$790,103	$837,124
1987	$693,517	$724,502	$734,041	$830,902	$791,155	$776,523	$728,692	$731,429	$777,454	NA
Difference	$32,465	$19,918	$13,414	$16,933	$28,890	$23,456	$24,847	$27,019	$12,649	NA
% Difference	4.7%	2.7%	1.8%	2.0%	3.7%	3.0%	3.4%	3.7%	1.6%	NA

2.0 SUMMARY OF FINDINGS FOR THE WALK - UP APARTMENT



2.0 SUMMARY OF FINDINGS FOR THE WALK-UP APARTMENT

TABLE WA. 5 : Comparative Total Building Costs 1980 -1988 *

YEAR	AVERAGE	EDMONTON	CALGARY	RED DEER	FORT McMURRAY	GRANDE PRAIRIE	** HINTON	LETHBRIDGE	MEDICINE HAT	*** LLOYD-MINSTER	**** PEACE RIVER
1980	$709,337	$660,295	$670,183	$685,282	$811,898	$736,435	-	$703,808	$697,459	-	-
1981	$756,703	$714,492	$719,003	$733,211	$861,728	$784,409	-	$740,084	$743,992	-	-
1982	$712,232	$665,273	$627,844	$710,485	$805,134	$700,436	$744,686	$720,280	$723,716	-	-
1983	$644,459	$603,046	$592,174	$623,852	$712,262	$669,574	$674,046	$632,872	$647,845	-	-
1984	$658,084	$600,039	$591,861	$624,342	$731,995	$694,794	$693,688	$632,121	$652,014	$701,901	-
1985	$669,882	$625,974	$617,049	$644,466	$734,420	$695,480	$690,526	$651,143	$655,347	$714,537	-
1986	$699,967	$648,534	$647,135	$665,963	$778,075	$742,644	$731,043	$679,312	$676,195	$730,802	-
1987	$754,246	$693,517	$724,502	$734,041	$830,902	$791,155	$776,523	$728,692	$731,429	$777,454	-
1988	$782,493	$725,982	$744,420	$747,455	$847,835	$820,045	$799,979	$753,539	$758,448	$790,103	$837,124

Notes :
- * Expressed in nominal dollars
- ** Hinton was not included in the 1980 and 1981 studies
- *** Lloydminster was not included in the 1980 through 1983 studies
- **** Peace River was not included in the 1980 through 1987 studies

2.0 SUMMARY OF FINDINGS FOR THE WALK-UP APARTMENT

TABLE WA. 6 : Comparative Cost per Square Foot of Gross Floor Area 1980 -1988 *

YEAR	AVERAGE	EDMONTON	CALGARY	RED DEER	FORT McMURRAY	GRANDE PRAIRIE	** HINTON	LETHBRIDGE	MEDICINE HAT	*** LLOYD-MINSTER	**** PEACE RIVER
1980	$35.48	$33.04	$33.52	$34.28	$40.61	$36.84	-	$35.20	$34.89	-	-
1981	$37.86	$35.75	$35.97	$36.68	$43.11	$39.24	-	$37.03	$37.22	-	-
1982	$35.63	$33.28	$31.41	$35.54	$40.28	$35.04	$37.26	$36.03	$36.21	-	-
1983	$32.24	$30.17	$29.63	$31.21	$35.63	$33.50	$33.72	$31.66	$32.41	-	-
1984	$32.92	$30.02	$29.61	$31.23	$36.62	$34.76	$34.70	$31.62	$32.62	$35.11	-
1985	$33.51	$31.32	$30.87	$32.24	$36.74	$34.79	$34.55	$32.58	$32.79	$35.75	-
1986	$35.02	$32.44	$32.37	$33.32	$38.93	$37.15	$36.57	$33.98	$33.83	$36.56	-
1987	$37.73	$34.70	$36.25	$36.72	$41.57	$39.58	$38.85	$36.46	$36.59	$38.89	-
1988	$39.15	$36.32	$37.24	$37.39	$42.42	$41.03	$40.02	$37.70	$37.94	$39.53	$41.88

Notes : * Expressed in nominal dollars
** Hinton was not included in the 1980 and 1981 studies
*** Lloydminster was not included in the 1980 through 1983 studies
**** Peace River was not included in the 1980 through 1987 studies

2.0 SUMMARY OF FINDINGS FOR THE WALK-UP APARTMENT

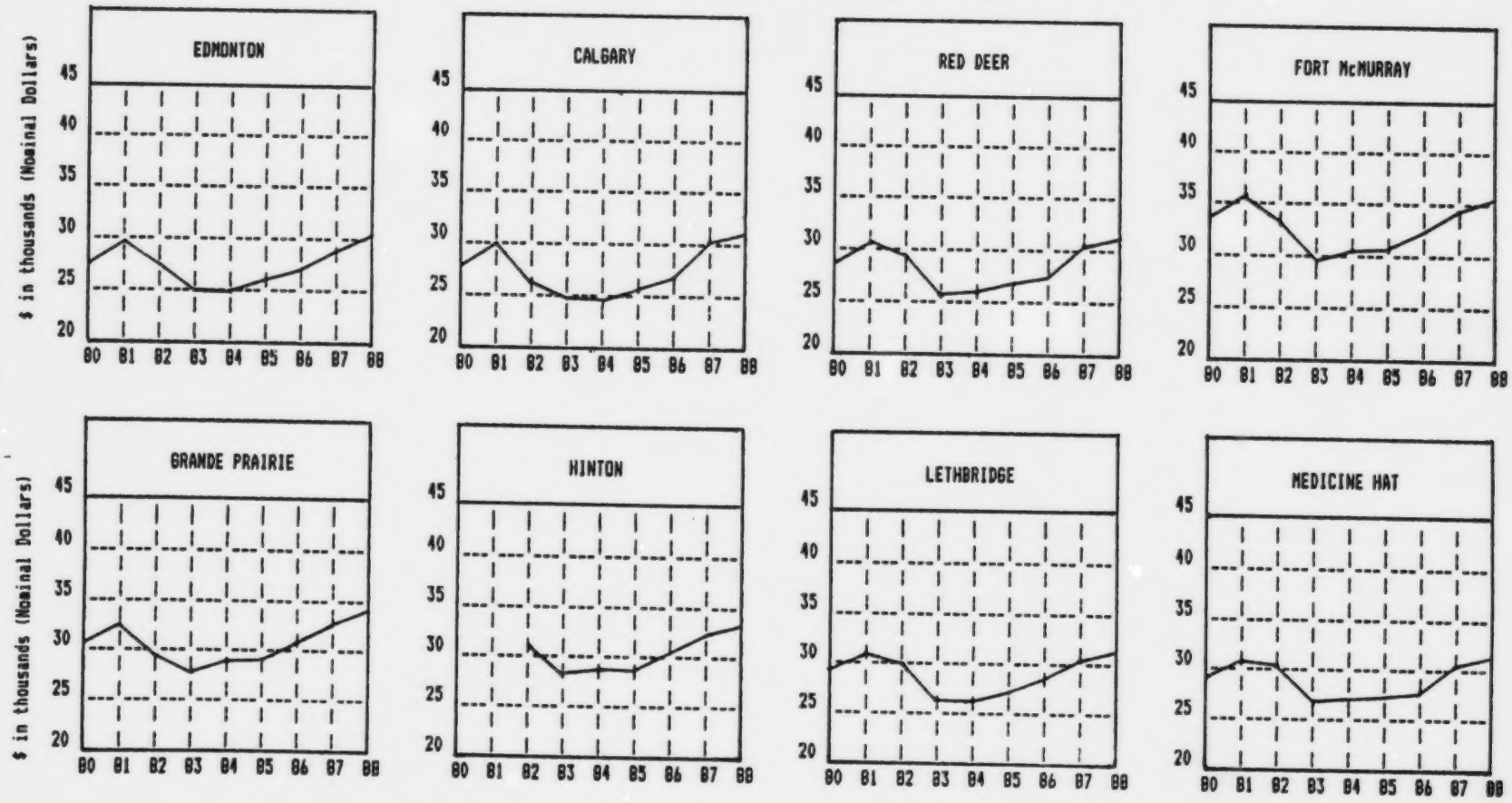
TABLE WA. 7 : Comparative Cost per Apartment Unit 1980 -1988 *

YEAR	AVERAGE	EDMONTON	CALGARY	RED DEER	FORT McMURRAY	GRANDE PRAIRIE	** HINTON	LETHBRIDGE	MEDICINE HAT	*** LLOYD-MINSTER	**** PEACE RIVER
1980	$29,555	$27,512	$27,924	$28,553	$33,829	$30,684	-	$29,325	$29,061	-	-
1981	$31,529	$29,771	$29,958	$30,550	$35,905	$32,684	-	$30,837	$31,000	-	-
1982	$29,677	$27,720	$26,160	$29,604	$33,547	$29,185	$31,029	$30,012	$30,155	-	-
1983	$26,853	$25,127	$24,674	$25,994	$29,678	$27,899	$28,085	$26,370	$26,994	-	-
1984	$27,420	$25,002	$24,661	$26,014	$30,500	$28,950	$28,904	$26,338	$27,167	$29,246	-
1985	$27,912	$26,082	$25,710	$26,853	$30,601	$28,978	$28,772	$27,131	$27,306	$29,772	-
1986	$29,165	$27,022	$26,964	$27,748	$32,420	$30,944	$30,460	$28,305	$28,175	$30,450	-
1987	$31,427	$28,897	$30,188	$30,585	$34,621	$32,965	$32,355	$30,362	$30,476	$32,394	-
1988	$32,604	$30,249	$31,018	$31,144	$35,326	$34,169	$33,332	$31,397	$31,602	$32,921	$34,880

Notes : * Expressed in nominal dollars
** Hinton was not included in the 1980 and 1981 studies
*** Lloydminster was not included in the 1980 through 1983 studies
**** Peace River was not included in the 1980 through 1987 studies

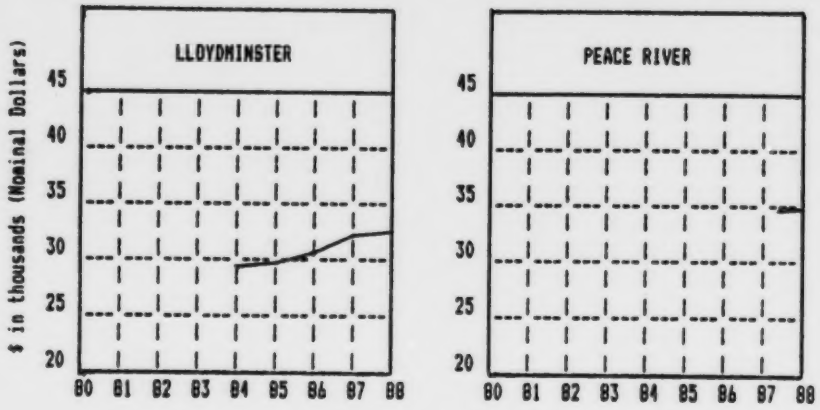
2.0 SUMMARY OF FINDINGS FOR THE WALK-UP APARTMENT

TABLE WA. 8 : Comparative Apartment Unit Cost Graphs 1980 -1988



2.0 SUMMARY OF FINDINGS FOR THE WALK-UP APARTMENT

TABLE WA. 8 : Comparative Apartment Unit Cost Graphs 1980 -1988 (Continued)



* Peace River not included in previous studies.

2.0 SUMMARY OF FINDINGS FOR THE WALK-UP APARTMENT

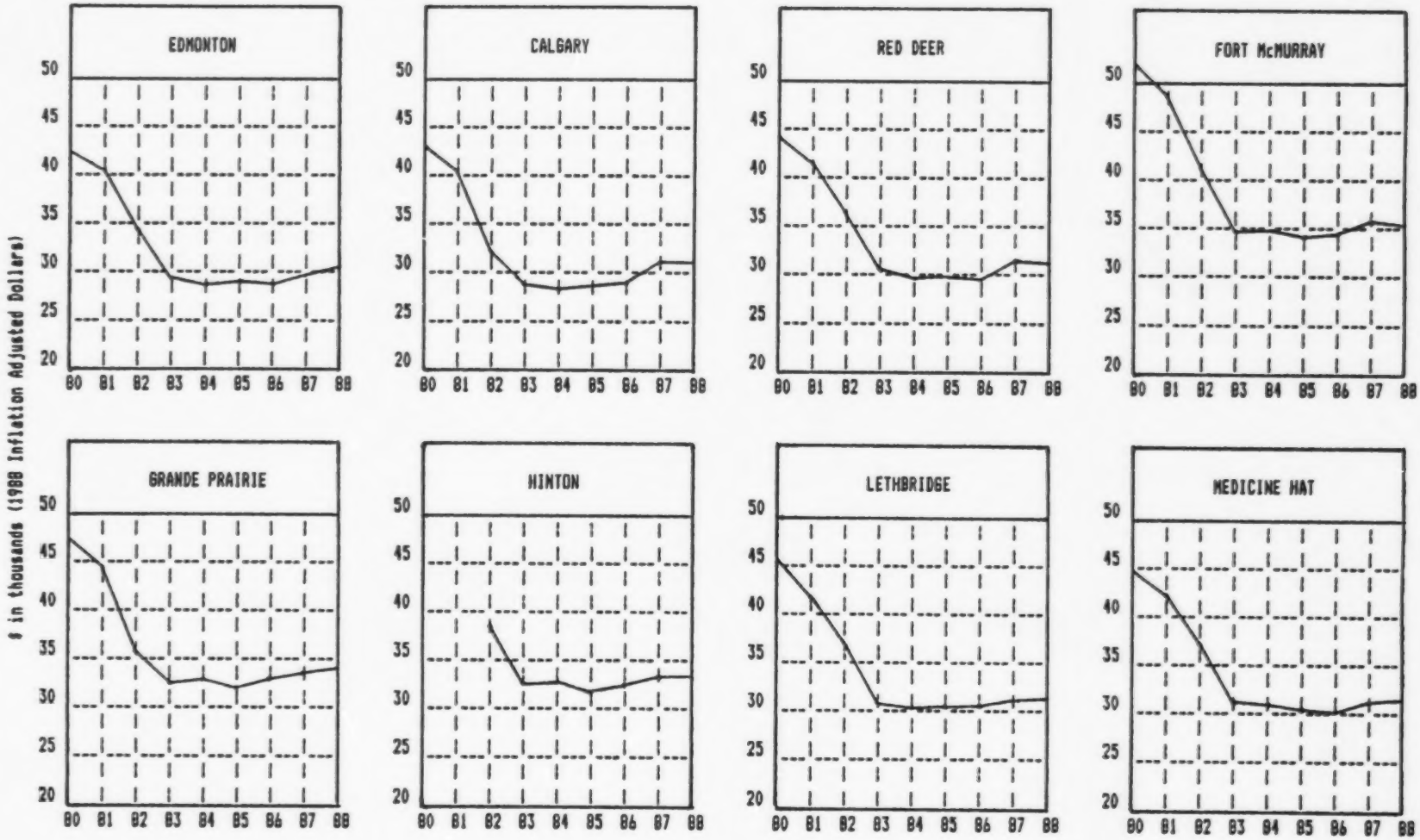
TABLE WA. 9 : Comparative Cost per Apartment Unit 1980 -1988 (Inflation Adjusted Dollars) *

YEAR	AVERAGE	EDMONTON	CALGARY	RED DEER	FORT McMURRAY	GRANDE PRAIRIE	** HINTON	LETHBRIDGE	MEDICINE HAT	*** LLOYD-MINSTER	**** PEACE RIVER
1980	$45,575	$42,424	$43,059	$44,029	$52,164	$47,315	-	$45,219	$44,812	-	-
1981	$42,975	$40,578	$40,833	$41,640	$48,939	$44,548	-	$42,031	$42,253	-	-
1982	$36,591	$34,179	$32,255	$36,502	$41,363	$35,985	$38,259	$37,005	$37,181	-	-
1983	$31,445	$29,424	$28,893	$30,439	$34,753	$32,670	$32,888	$30,879	$31,610	-	-
1984	$31,341	$28,577	$28,188	$29,734	$34,862	$33,090	$33,037	$30,104	$31,052	$33,428	-
1985	$31,038	$29,003	$28,590	$29,861	$34,028	$32,224	$31,994	$30,170	$30,364	$33,106	-
1986	$31,207	$28,914	$28,851	$29,690	$34,689	$33,110	$32,592	$30,286	$30,147	$32,582	-
1987	$32,370	$29,764	$31,094	$31,503	$35,660	$33,954	$33,326	$31,273	$31,390	$33,366	-
1988	$32,604	$30,249	$31,018	$31,144	$35,326	$34,169	$33,332	$31,397	$31,602	$32,921	$34,880

Notes : * 1. Expressed in 1988 Inflation adjusted dollars
2. Inflation adjustments have been based on the Consumer Price Index for Edmonton and Calgary
** Hinton was not included in the 1980 and 1981 studies
*** Lloydminster was not included in the 1980 through 1983 studies
**** Peace River was not included in the 1980 through 1987 studies

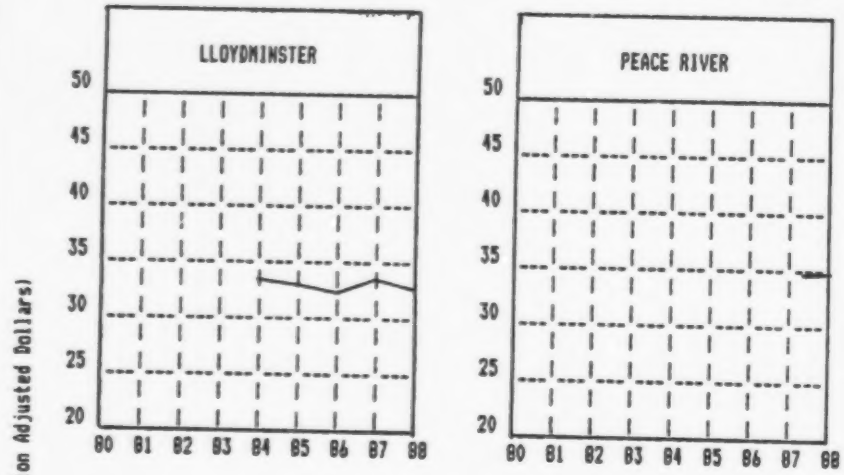
2.0 SUMMARY OF FINDINGS FOR THE WALK-UP APARTMENT

TABLE WA. 10 : Comparative Apartment Unit Cost Graphs 1980 -1988 (Inflation Adjusted Dollars)



2.0 SUMMARY OF FINDINGS FOR THE WALK-UP APARTMENT

TABLE WA. 10 : Comparative Apartment Unit Cost Graphs 1980 -1988 (Inflation Adjusted Dollars)



* Peace River not included in previous studies.

2.0 SUMMARY OF FINDINGS FOR THE WALK-UP APARTMENT

TABLE WA. 11 : Trade Division Cost Summaries

LOCATION	EDMONTON	CALGARY	RED DEER	FORT McMURRAY	GRANDE PRAIRIE	HINTON	LETHBRIDGE	MEDICINE HAT	LLOYD-MINSTER	PEACE RIVER
Divisions										
1. Excavation	2,681	4,275	3,421	3,978	3,480	2,861	3,642	3,125	3,686	3,480
2. Concrete	19,672	18,453	20,094	23,997	23,516	23,451	19,803	21,209	20,147	21,738
3. Damproofing	734	885	923	1,230	1,156	921	932	897	884	1,156
4. Siding	14,950	14,955	15,214	18,995	18,861	17,946	17,319	17,132	18,372	19,337
5. Roofing	25,080	26,269	26,321	33,575	28,070	27,140	25,612	26,380	28,370	28,572
6. Rough Carpentry	134,551	140,671	132,323	160,335	150,108	148,550	143,114	133,478	137,550	153,486
7. Finish Carpentry	10,459	11,207	10,332	11,653	10,835	9,720	10,062	10,051	10,313	11,399
8. Windows and Glazing	25,783	24,595	26,586	30,134	27,550	26,844	26,643	26,974	26,513	28,915
9. Sealants	855	895	850	912	917	862	857	869	877	917
10. Doors	41,666	39,538	41,751	44,717	45,660	44,525	42,079	41,102	43,227	46,666
11. Hardware	3,713	3,896	3,759	4,117	3,961	3,784	3,927	3,904	3,778	3,995
12. Ceramic Tiling	5,432	5,562	5,396	6,535	6,473	5,928	6,223	6,437	7,449	6,769
SUB - TOTAL	$285,576	$291,201	$286,970	$340,178	$320,587	$312,532	$300,213	$291,558	$301,166	$326,430

2.0 SUMMARY OF FINDINGS FOR THE WALK-UP APARTMENT

TABLE WA. 11 : Trade Division Cost Summaries (cont'd)

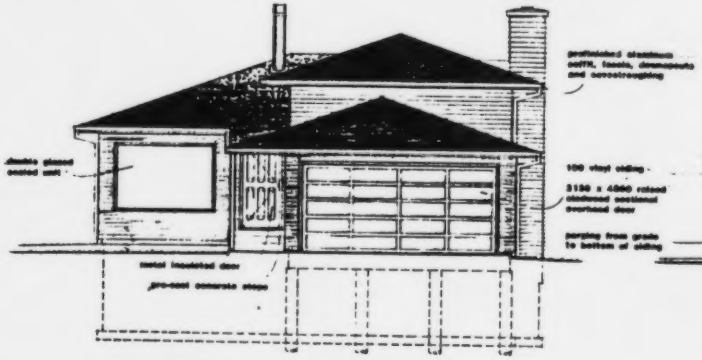
LOCATION	EDMONTON	CALGARY	RED DEER	FORT McMURRAY	GRANDE PRAIRIE	HINTON	LETHBRIDGE	MEDICINE HAT	LLOYD-MINSTER	PEACE RIVER
Divisions										
13. Wallboard	56,806	57,114	56,352	68,820	61,826	65,809	57,140	58,075	65,671	62,737
14. Flooring	47,448	48,464	48,598	52,922	51,264	49,250	49,399	50,865	49,302	52,418
15. Painting	19,958	19,673	21,883	23,779	23,176	22,813	23,195	23,700	22,971	23,387
16. Fitting	46,891	46,653	49,772	56,509	51,720	50,842	51,583	50,657	49,546	56,473
17. Specialties	17,553	17,853	17,656	19,315	19,100	18,071	17,745	18,409	17,974	19,458
18. Appliances	31,230	31,230	30,704	32,552	32,948	31,498	31,800	31,800	31,273	33,534
19. Plumbing	63,120	64,680	63,840	69,120	74,016	67,248	62,928	64,896	61,920	75,816
20. Heating	30,720	33,840	36,240	43,080	42,288	39,216	28,200	31,968	43,968	42,912
21. Ventilation	7,680	7,872	7,488	9,432	9,312	9,276	8,568	8,664	9,216	9,408
22. Fire Protection	2,280	2,160	2,112	2,688	2,688	2,688	2,184	2,256	2,784	2,784
23. Electrical	39,960	43,320	47,520	53,040	55,560	55,200	44,784	49,224	59,280	56,208
24. Site Overhead	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
Subtotals - 1-24	$699,222	$714,060	$719,135	$821,435	$794,485	$774,443	$727,739	$732,072	$765,071	$811,564
25. Gnrl. Contr's Ovhd.& Profit	26,760	30,360	28,320	26,400	25,560	25,536	25,800	26,376	25,032	25,560
TOTAL	$725,982	$744,420	$747,455	$847,835	$820,045	$799,979	$753,539	$758,448	$790,103	$837,124

APPENDIX A

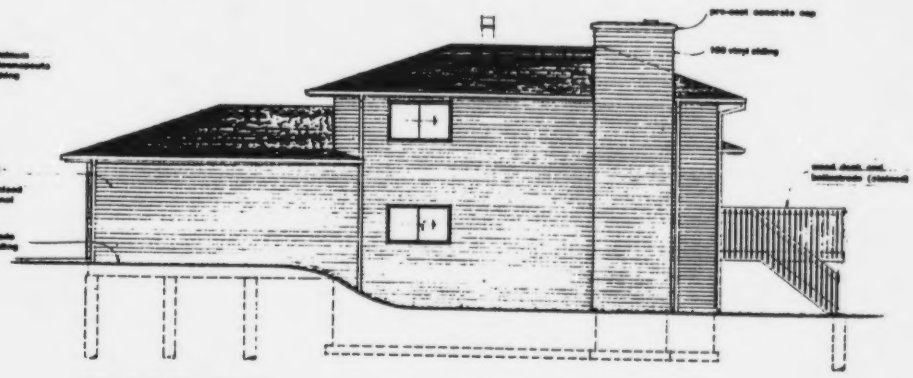
Reduced Drawings : Single-Detached Dwelling

BASEMENT/FOUNDATION PLAN

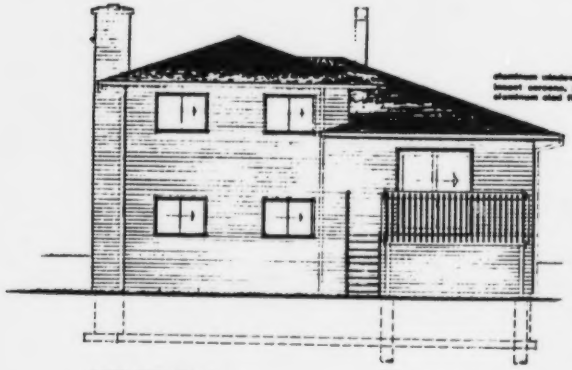
MAIN/UPPER FLOOR PLAN



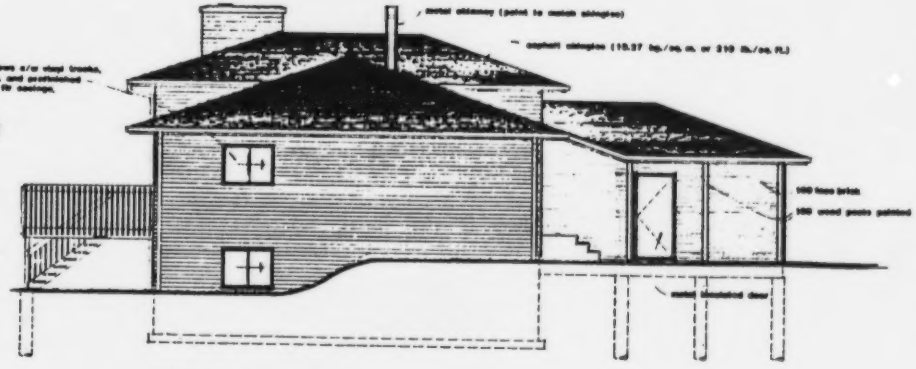
FRONT ELEVATION



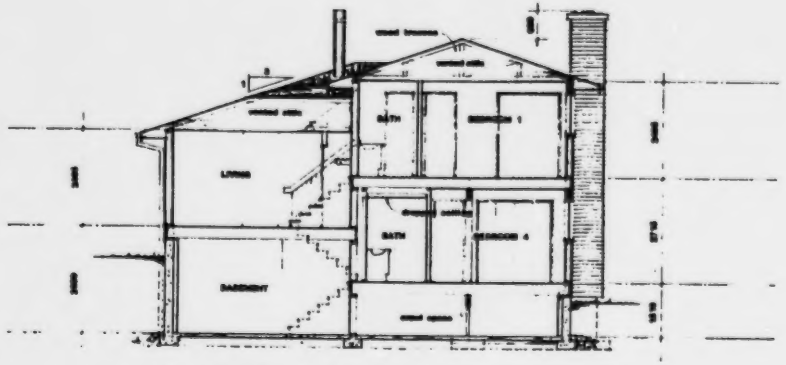
LEFT SIDE ELEVATION



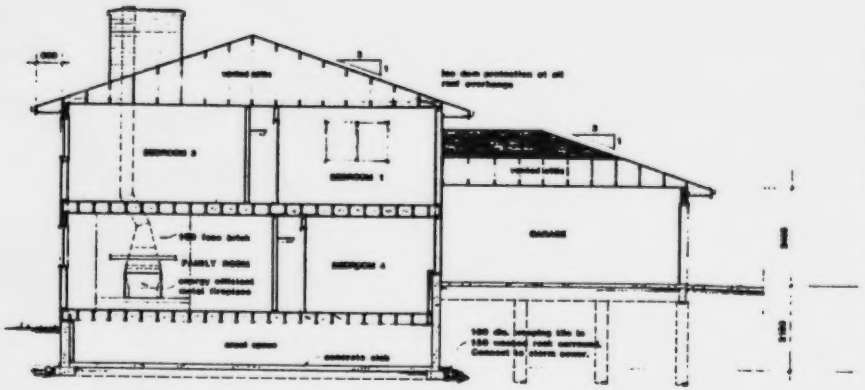
BACK ELEVATION



RIGHT SIDE ELEVATION



BUILDING CROSS SECTION



BUILDING CROSS SECTION

SPECIFICATIONS

FOUNDATIONS

- 20 Mpa, type 50 concrete in 400 x 200 reinforced concrete footings
- 20 Mpa, type 50 concrete in 200mm up concrete foundation walls c/w 4 rows of #10 rebar
- 20 Mpa concrete basement floor slab 75mm thick over 6 mil poly, and 150mm compacted sand
- 100mm reinforced garage floor on compacted sand
- 300mm dia. reinforced concrete piles under garage floor and grade beam
- 100mm dia. weeping tile c/w minimum of 150 crushed gravel surround
- asphalt emulsion spray applied to interior and exterior of foundation

FRAMING

- floor joists 38 X 235 SD spruce at 400mm o.c. and c/w 38 X 38 crossbridging
- built-up fir beams as indicated sheet posts
- 19mm tongue and groove fir plywood subfloor
- 19mm fir plywood underlay
- exterior walls 38 X 140 SD spruce at 400mm o.c.
- interior partitions 38 X 89 SD spruce at 400mm o.c.
- 9mm "sheathboard" wall sheathing
- prefinished wood roof trusses
- 19mm spruce plywood roof sheathing

INSULATION/VAPOUR BARRIER/DRYWALL

- exterior walls R20 glass fibre batts
- vapour barrier overlaps at all joints
- ceilings R40 loose fill glass fibre insulation and 4 mil poly, o.a.
- 13mm gypsum wallboard throughout

EXTERIOR FINISHES

(see building elevations on drawing no. 2)

DOORS AND WINDOWS

- metal insulated front door
- 1626 wide aluminum patio door c/w fixed screen and prefinished aluminum sheet fir frames and casings
- hollow core interior doors (colonry and mahogany), stained
- mahogany faced bi-fold closet doors
- aluminum windows c/w vinyl inserts, fixed screens, and prefinished aluminum sheet fir casings
- insulated glass vanity unit in living room window
- 4880 wide X 2130 high white sectional overhead insulated garage door (painted)

INTERIOR FINISHES

- concrete tile in bath surround
- texture finish in cottage
- sheet vinyl flooring in bathrooms, kitchen and dining area
- 83oz., 100% nylon carpet with foam strip finish underlay - paint to walls, below sand-glass fireplaces, kitchen, dining area)
- stained baseboards and trim

FITTINGS

- shelves fir plywood shelving with hardwood edging
- bathroom vanity (solid wood)
- kitchen overhead and base cabinets (solid wood)
- basement wood railing c/w spindles, railing shoe, and newel posts

SPECIALTIES

- all washroom accessories including full-size mirrors
- medicine cabinets
- 33mm dia. metal shower curtain rods
- mailbox and house numbers
- range hood
- energy efficient 813mm fireplace c/w fan
- approved hardware throughout

PLUMBING AND HEATING

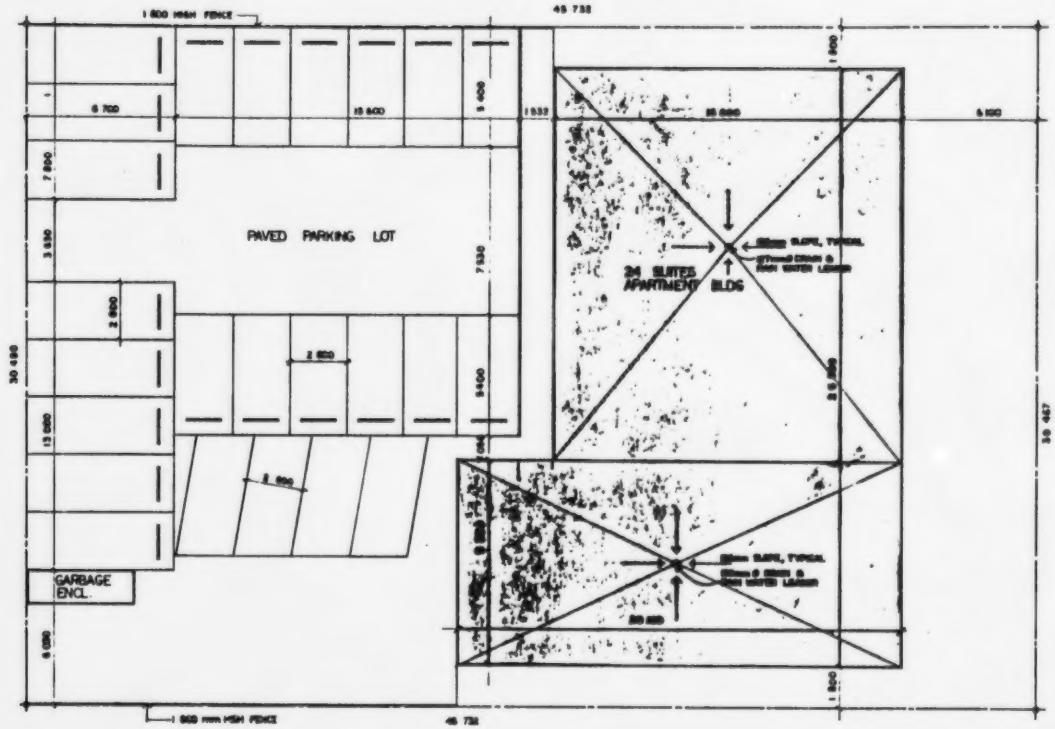
- stainless steel double kitchen sink
- vanity sinks
- cedar closets
- fiberglass tub/shower units
- (bathroom roughs-in
- 3 piece bath as sister head
- washer standpipe
- 2 hosebibs
- 38 imp. gallon (150 litre) water heater (gas fired)
- gas fired, forced air furnace c/w humidifier

ELECTRICAL

- 100 amp, 32 breaker shielded service
- 220 volt electrical service to dryer and range locations
- exterior c/w thermostat for [illegible] feature in main bath
- GFI protected plugs in bath[illegible]
- 2 exterior weatherproof wall plugs
- dishwasher roughs-in
- 3 telephone locations
- 3 cable locations
- smoke detectors
- electrical wiring for future garage door opener
- range hood installation
- bathroom fans
- separated lighting packages
- roughed-in central vacuum system

APPENDIX B

Reduced Drawings : Walk-Up Apartment



STATISTICS

SITE AREA: 179m²

SUITES: 24 ONE BEDROOM

BUILDING AREA: 465m²

PARKING: 24 CARS

THE BUILDING IS REQUIRED TO FACE AT LEAST ONE STREET.

ACCESS WALL PANELS -OR- WINDOW SHALL BE PROVIDED ON SECOND AND THIRD FLOOR IN AT LEAST 1 WALL FACING ON A STREET.

SPACIAL SEPARATIONS BETWEEN BUILDINGS:

THE MAXIMUM PERCENTAGE OF UNPROTECTED OPENINGS IN AN EXPOSED BUILDING FACE SHALL CONFORM TO THE REQUIREMENTS OUTLINED IN THE ALBERTA BUILDING CODE. (9.10.14.)

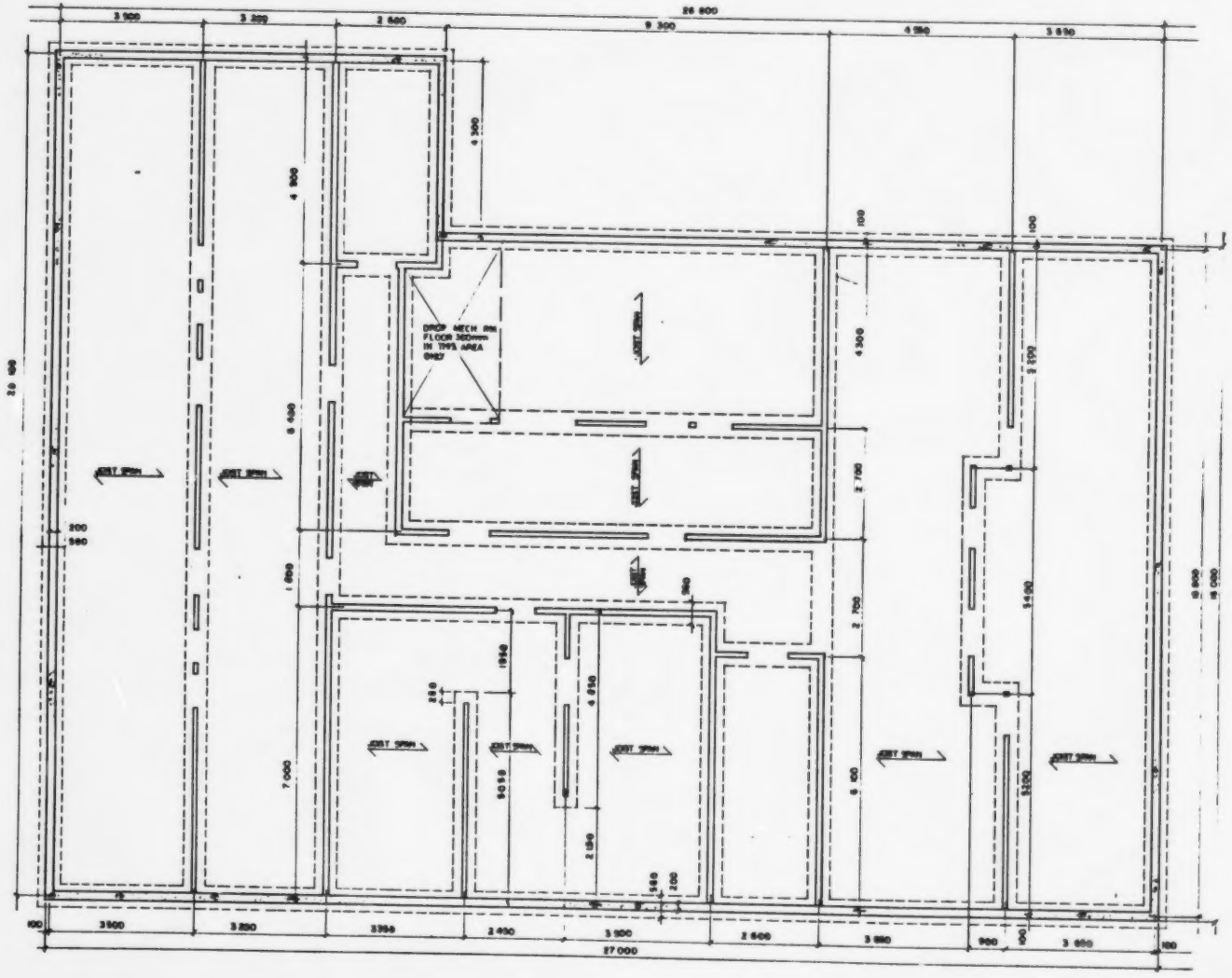
ONE SET OF EXAMINED DRAWINGS SHALL BE AVAILABLE CONTINUOUSLY AT THE CONSTRUCTION SITE DURING WORKING HOURS FOR INSPECTION BY THE AUTHORITY HAVING JURISDICTION.

ALBERTA HOUSE COST COMPARISON STUDY

SITE PLAN

SCALE 1:100

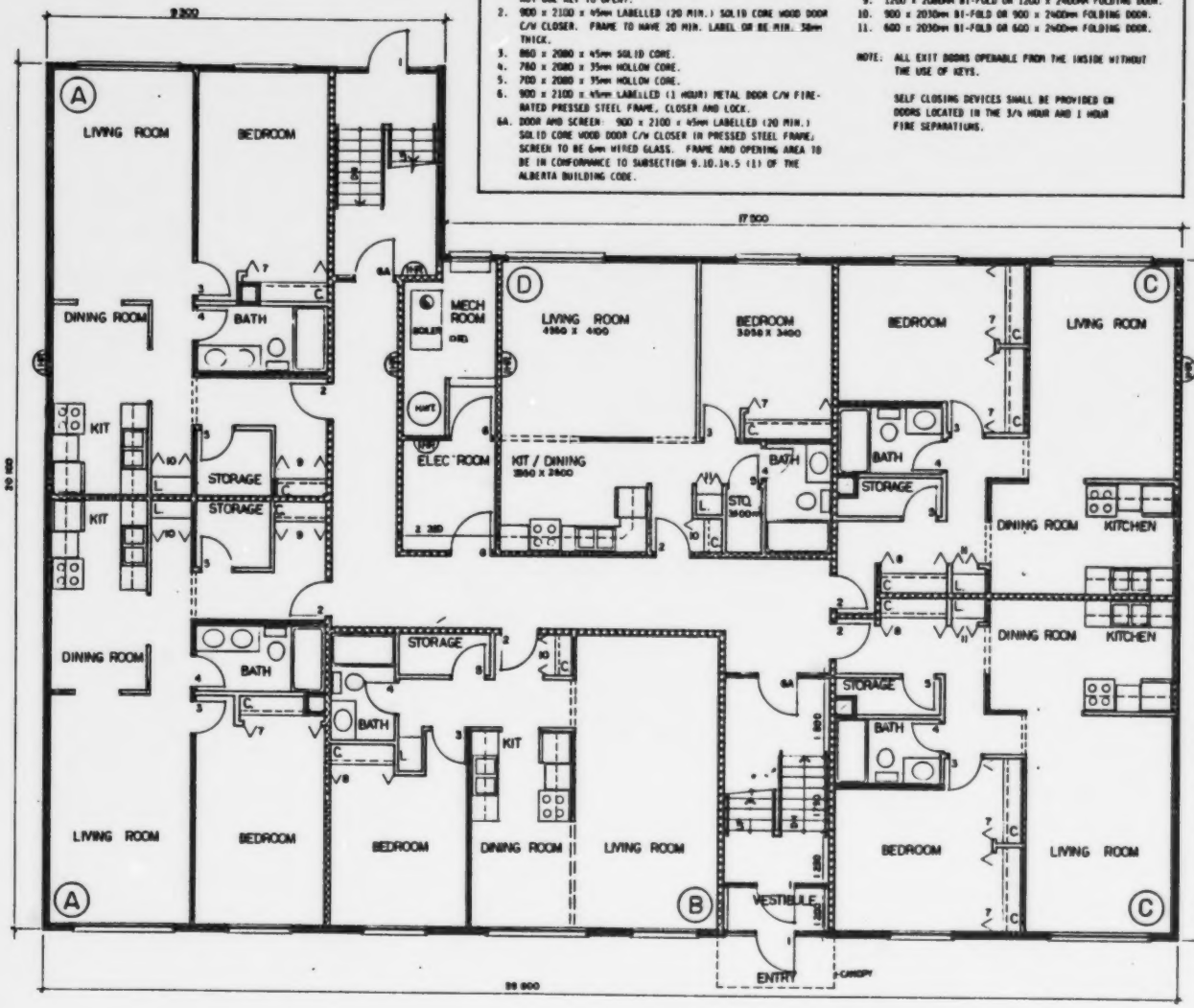
0 1 2 3 4 5 6 7 8 9 10m



ALBERTA HOUSE COST COMPARISON STUDY

FOUNDATION PLAN

SCALE 1:50



DOOR SCHEDULE

1. 900 x 2100mm ALUMINUM GLAZED DOOR C/W DOOR CLOSER, PUSH AND PULL, LOCK AND THRESHOLD. (NOTE: FROM INSIDE SHOULD NOT USE KEY TO OPEN).
2. 900 x 2100 x 45mm LABELLED (20 MIN.) SOLID CORE WOOD DOOR C/W CLOSER. FRAME TO HAVE 20 MIN. LABEL OR BE MIN. 38mm THICK.
3. 860 x 2080 x 45mm SOLID CORE.
4. 760 x 2080 x 35mm HOLLOW CORE.
5. 700 x 2080 x 35mm HOLLOW CORE.
6. 900 x 2100 x 45mm LABELLED (1 HOUR) METAL DOOR C/W FIRE-RATED PRESSED STEEL FRAME, CLOSER AND LOCK.

6A. DOOR AND SCREEN: 900 x 2100 x 45mm LABELLED (20 MIN.) SOLID CORE WOOD DOOR C/W CLOSER IN PRESSED STEEL FRAME; SCREEN TO BE 6mm WIRED GLASS. FRAME AND OPENING AREA TO BE IN CONFORMANCE TO SUBSECTION 9.10.14.5 (1) OF THE ALBERTA BUILDING CODE.

7. 1800 x 2080mm BI-FOLD OR 1800 x 2400mm FOLDING DOOR.
8. 1500 x 2080mm BI-FOLD OR 1800 x 2400mm FOLDING DOOR.
9. 1200 x 2080mm BI-FOLD OR 1200 x 2400mm FOLDING DOOR.
10. 900 x 2030mm BI-FOLD OR 900 x 2400mm FOLDING DOOR.
11. 600 x 2030mm BI-FOLD OR 600 x 2400mm FOLDING DOOR.

NOTE: ALL EXIT DOORS OPERABLE FROM THE INSIDE WITHOUT THE USE OF KEYS.

SELF CLOSING DEVICES SHALL BE PROVIDED ON DOORS LOCATED IN THE 3/4 HOUR AND 1 HOUR FIRE SEPARATIONS.

WALL LEGEND

EXTERIOR STUD WALL C/W 38 x 38mm STRAPPING TO FOUNDATION WALL: SIDING OR STUCCO, BUILDING PAPER, 38 x 140mm STUDS @ 400mm O.C., RSI 3.5 MINERAL WOOL INSULATION, VAPOUR BARRIER, 12.7mm GYPSUM BOARD.

(1HR) EXTERIOR STUD WALL: 1 HOUR FIRE RESISTANCE RATING, C/W 38 x 38mm STRAPPING TO FOUNDATION WALL: NON-COMBUSTIBLE SIDING OR STUCCO, BUILDING PAPER, 38 x 140mm STUDS @ 400mm O.C., RSI 3.5 MINERAL WOOL INSULATION WITH DENSITY OF 1.2kG/m³, VAPOUR BARRIER, 15.9mm TYPE X GYPSUM BOARD.

EXTERIOR STUD WALL: SIDING OR STUCCO, BUILDING PAPER, 38 x 89mm STUDS @ 400mm O.C., RSI 2.1 MINERAL WOOL INSULATION, VAPOUR BARRIER, 12.7mm GYPSUM BOARD.

(1HR) EXTERIOR STUD WALL: 1 HOUR FIRE RESISTANCE RATING, NON-COMBUSTIBLE SIDING OR STUCCO, BUILDING PAPER, 38 x 89mm STUDS @ 400mm O.C., RSI 2.1 MINERAL WOOL INSULATION WITH DENSITY OF 1.2kG/m³, VAPOUR BARRIER, 15.9mm TYPE X GYPSUM BOARD.

INTERIOR WALL (3/4 HOUR FIRE SEPARATION): 2 ROWS OF 38 x 89mm STUDS, EACH SET @400mm O.C. STAGGERED ON COMMON 38 x 140mm PLATE, MINERAL FIBRE WITH A MASS OF AT LEAST 1.2kG/m² ON EACH SIDE; 12.7mm GYPSUM BOARD, BOTH SIDES.

INTERIOR WALL: 12.7mm GYPSUM BOARD BOTH SIDES OF 38 x 140mm STUDS.

INTERIOR WALL: (3/4 HOUR FIRE RESISTANCE RATING) 38 x 89mm STUDS @ 400mm O.C. (BASEMENT - 38 x 140mm STUDS) AND 12.7mm TYPE X GYPSUM BOARD, BOTH SIDES.

(1HR) INTERIOR WALL: (1 HOUR FIRE SEPARATION) 2 ROWS OF 38 x 89mm STUDS, EACH SET @400mm O.C. STAGGERED ON COMMON 38 x 140mm PLATE, MINERAL FIBRE ON EACH SIDE, 15.9mm TYPE X GYPSUM BOARD, BOTH SIDES.

(1HR) INTERIOR WALL: (1 HOUR FIRE SEPARATION) 38 x 140mm STUDS @ 400mm O.C. AND 15.9mm TYPE X GYPSUM BOARD BOTH SIDES.

INTERIOR WALL: 38 x 89mm STUDS AT 400mm O.C. AND 12.7mm GYPSUM BOARD, BOTH SIDES.

DROP BEAM

NOTES

- DOUBLE STUDS UNDER ALL BEARING POINTS AND ALL OPENINGS.
- LINTELS: 2 - 38 x 235mm BUILT-UP LINTEL, HORIZONTALLY ABOVE ALL OPENINGS.
- BALCONY CANTILEVERED JOISTS SHALL EXTEND INTO BUILDING MINIMUM 2400mm.

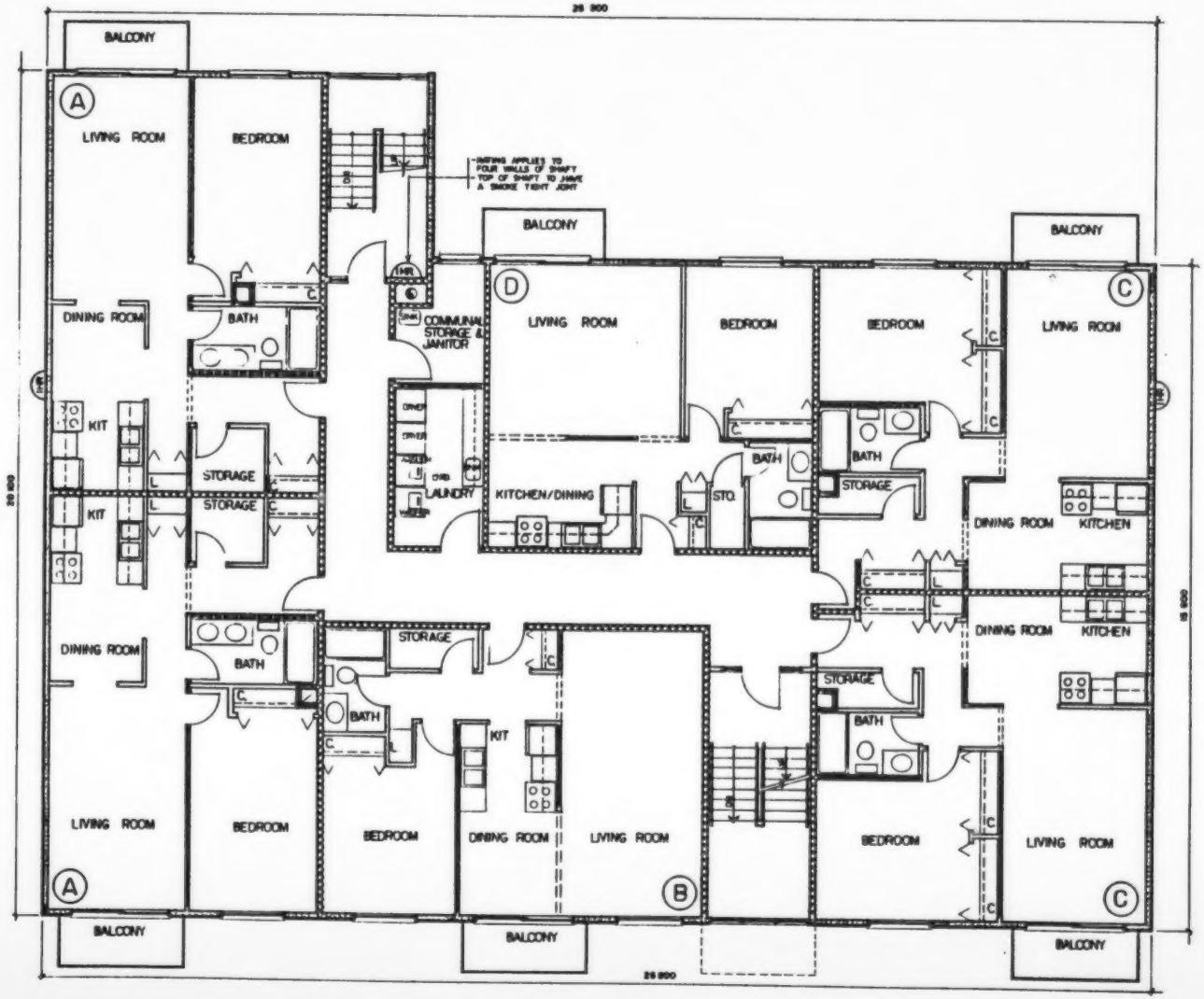
SHAFT ENCLOSURE: 3/4 FIRE RESISTANCE RATING AND STC OF 45, 15.9mm TYPE X GYPSUM BOARD, 57mm x .530mm THICK GALVANIZED STEEL I-STUDS AT 400mm O.C. AND J-TRACKS TOP AND BOTTOM, RESILIENT FURRING CHANNELS @ 600mm O.C., MINERAL WOOL INSULATION WITH DENSITY OF 1.2kG/m², 19mm GYPSUM CORE BOARD.

ALBERTA HOUSE COST COMPARISON STUDY

BASEMENT FLOOR PLAN

SCALE 1:100

0 .5 1 2 3 4 5 6m

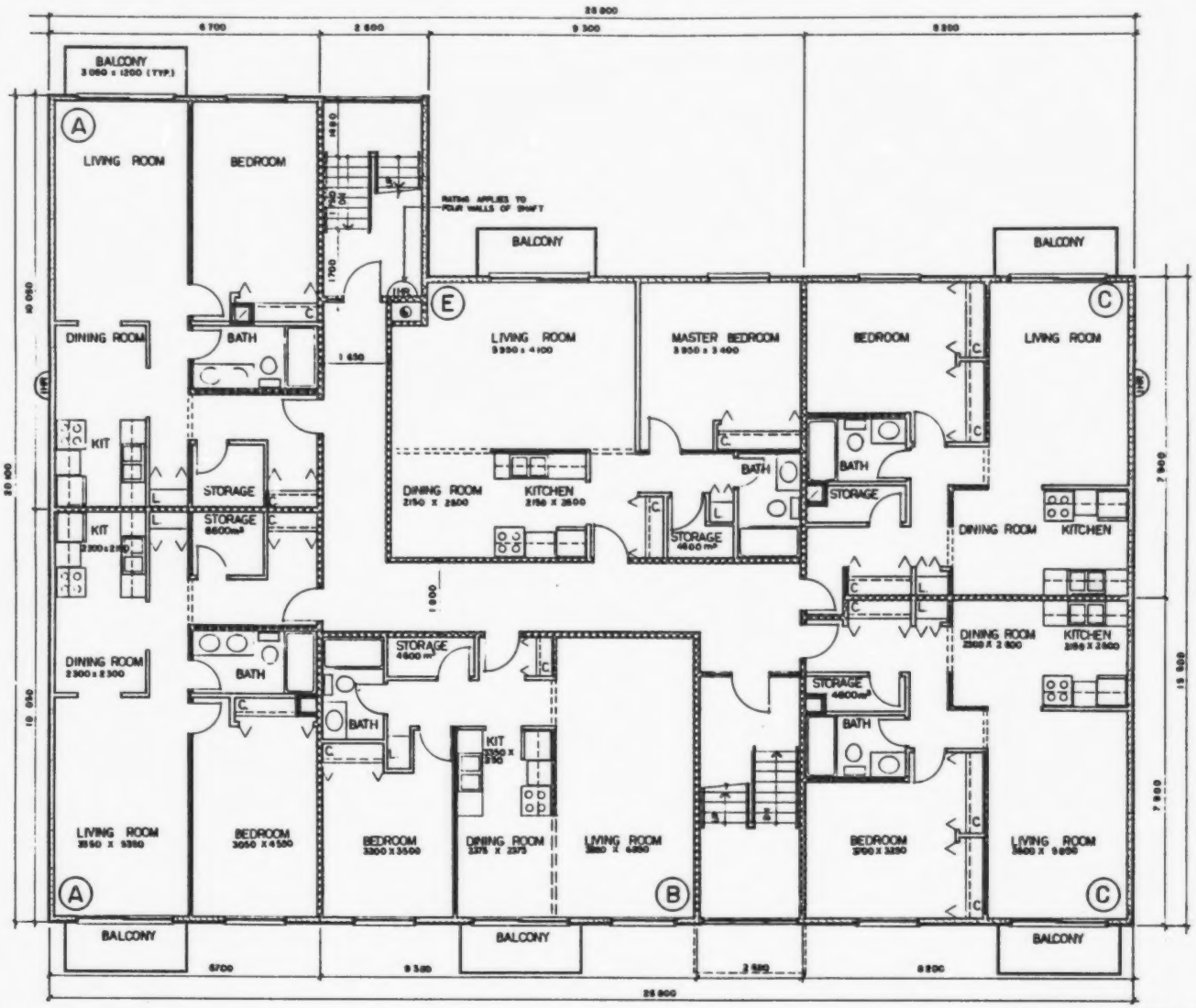


NOTE
SEE BASEMENT FLOOR PLAN FOR TYPICAL DOOR & BI-FOLD DOOR TYPES, SIZES & LOCATIONS

ALBERTA HOUSE COST COMPARISON STUDY

MAIN FLOOR PLAN

SCALE 1:50



NOTE
SEE BASEMENT FLOOR PLAN
FOR TYPICAL DOOR, BI-FOLD
DOOR TYPES, SIZES & LOCATIONS

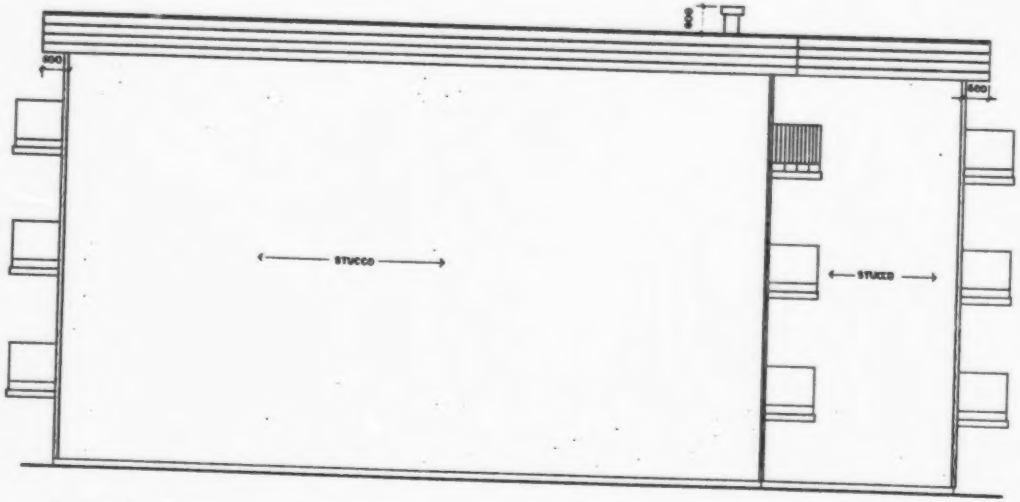
ALBERTA HOUSE COST COMPARISON STUDY

2ND & 3RD FLOOR PLAN

SCALE 1:50

METAL CHIMNEY
G.I. FLASHING PAINTED TO MATCH FASCIA
METAL FASCIA PAINTED WHITE
BALCONY GUARD - 1070mm HIGH; 970mm HIGH METAL PICKETS AT 100mm O.C.; RAILING SECURED TO BALCONY DECK AT 1200mm O.C. MAX.
STAINED DARK BROWN CEDAR COLUMN
STUCCO
CANOPY
PARGING

FRONT ELEVATION

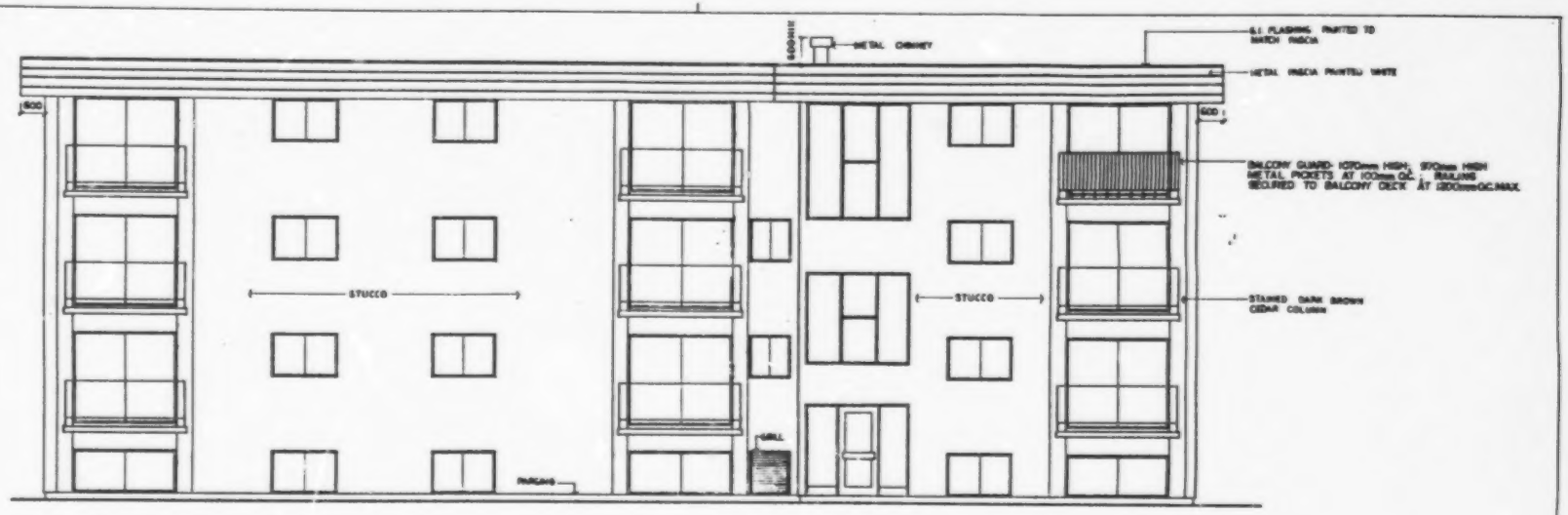


RIGHT ELEVATION

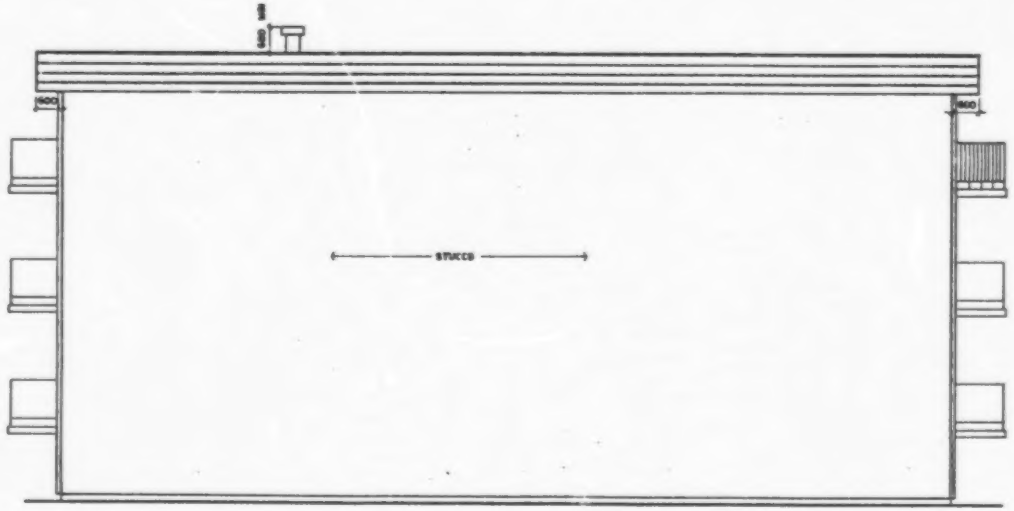
ALBERTA HOUSE COST COMPARISON STUDY

ELEVATIONS

SCALE 1:50



REAR ELEVATION



LEFT ELEVATION

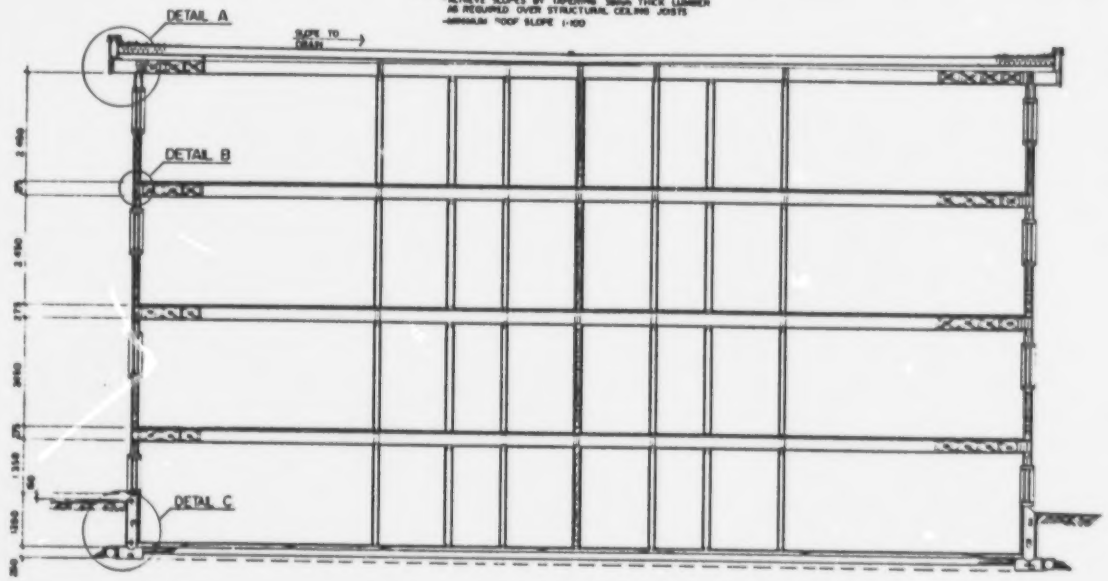
DRAWINGS SHALL BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER OR ARCHITECT REGISTERED IN THE PROVINCE OF ALBERTA.

ALBERTA HOUSE COST COMPARISON STUDY

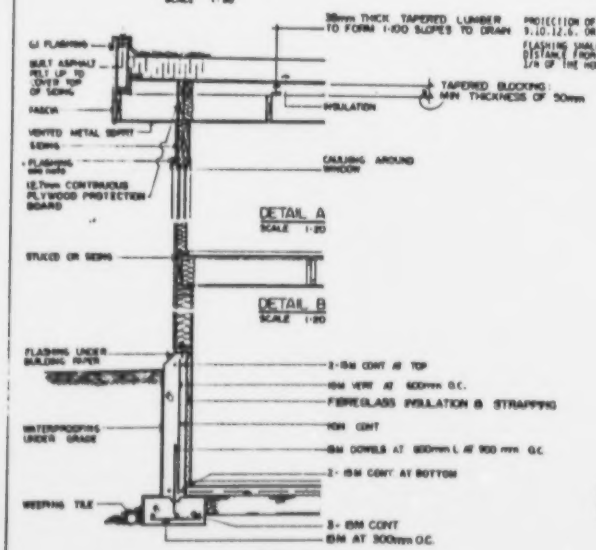
ELEVATIONS

SCALE 1:50

NOTE - SEE SITE PLAN FOR ROOF SLOPE CONFIGURATION
- ACHIEVE SLOPES BY TAPERING 38mm THICK LUMBER AS REQUIRED OVER STRUCTURAL CEILING JOISTS
- MINIMUM ROOF SLOPE 1:100



SECTION
SCALE 1:50



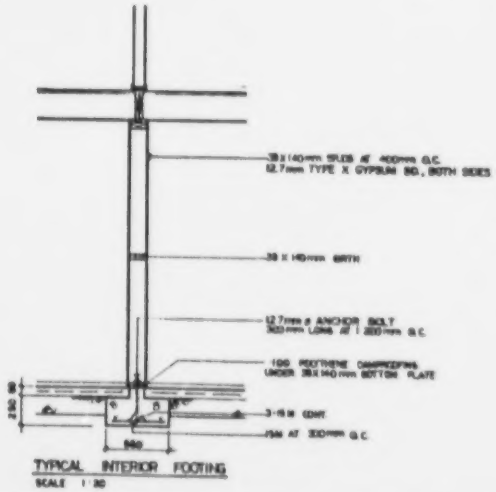
PROJECTION OF SOFFITS SHALL BE PROVIDED AS STATED IN ARTICLES 9.10.12.6. OR 9.10.12.7.

CLADDING SHALL BE APPLIED OVER ALL EXTERIOR OPENINGS WHERE THE VERTICAL DISTANCE FROM THE BOTTOM OF THE EAVE TO THE TOP OF THE HEAD IS MORE THAN 1/4 OF THE HORIZONTAL OVERHANG OF THE EAVE.

DETAIL A
SCALE 1:20

DETAIL B
SCALE 1:20

DETAIL C
SCALE 1:10



TYPICAL INTERIOR FOOTING
SCALE 1:20

ROOF CONSTRUCTION - 1 HOUR FIRE RESISTANCE RATING
- ROOFING GRAVEL
- BUILT-UP ROOFING
- RSI 6 RIGID FIBREGLASS INSULATION AND VAPOUR BARRIER
- 10mm PLYWOOD SHEATHING. ALL EDGES SUPPORTED WITH MIN. 38 x 38mm WOOD BLOCKING
- 38 x 235mm nD. I SPRUCE JOISTS AT 400mm O.C.
- 38 x 38mm CROSS-BRIDGING
- 15.9mm TYPE X GYPSUM BOARD

NOTE
ALTERNATE INSULATION AND A FIRECLAY BATT INSULATION SET ON JOIST SPACE

EXTERIOR WALL CONSTRUCTION

TYPE A: NO FIRE RESISTANCE RATING
- SIDING OR STUCCO
- BUILDING PAPER
- RSI 2.1 MINERAL WOOL INSULATION AND VAPOUR BARRIER
- 38 x 89mm WOOD STUDS @ 400mm O.C. (38 x 140mm WOOD STUDS @ 400mm O.C. FOR BASEMENT)
- 12.7mm GYPSUM BOARD

TYPE B: 1 HOUR FIRE RESISTANCE RATING
- SAME AS TYPE A EXCEPT MINERAL WOOL INSULATION TO HAVE DENSITY OF 1.2KG/M³; 15.9mm TYPE X GYPSUM BOARD AND STUCCO OR NON-COMBUSTIBLE SIDING

FLOOR CONSTRUCTION
- 1/2 HOUR FIRE SEPARATION AND S.T.C. RATING OF 45
- FLOOR FINISH
- 8mm PLYWOOD UNDERLAY
- 19mm T & G LUMBER OR 15.9mm PLYWOOD OR WAFERBOARD SUBFLOOR WITH MINERAL FIBRE BETWEEN JOISTS SPACED 400mm O.C.
- 38 x 235mm NO. 1 SPRUCE JOISTS AT 400mm O.C.
- 38 x 38mm CROSS-BRIDGING AT 2.1m O.C. MAX.
- RESILIENT CHANNELS
- 15.9mm TYPE X GYPSUM BOARD TYPICALLY EXCEPT FOR MECHANICAL ROOM CEILING: APPLY 2 LAYERS OF 15.9mm TYPE X GYPSUM BOARD

CORRIDOR AND DEMISING WALL CONSTRUCTION
- 1/2 HOUR FIRE SEPARATION AND S.T.C. RATING OF 45
- TWO ROWS 38 x 89mm STUDS, EACH SET 400mm O.C. STAGGERED ON COMMON 38 x 140mm PLATE, MINERAL FIBRE WITH A MASS OF AT LEAST 1.2KG/M² ON EACH SIDE
- 12.7mm GYPSUM BOARD, BOTH SIDES.

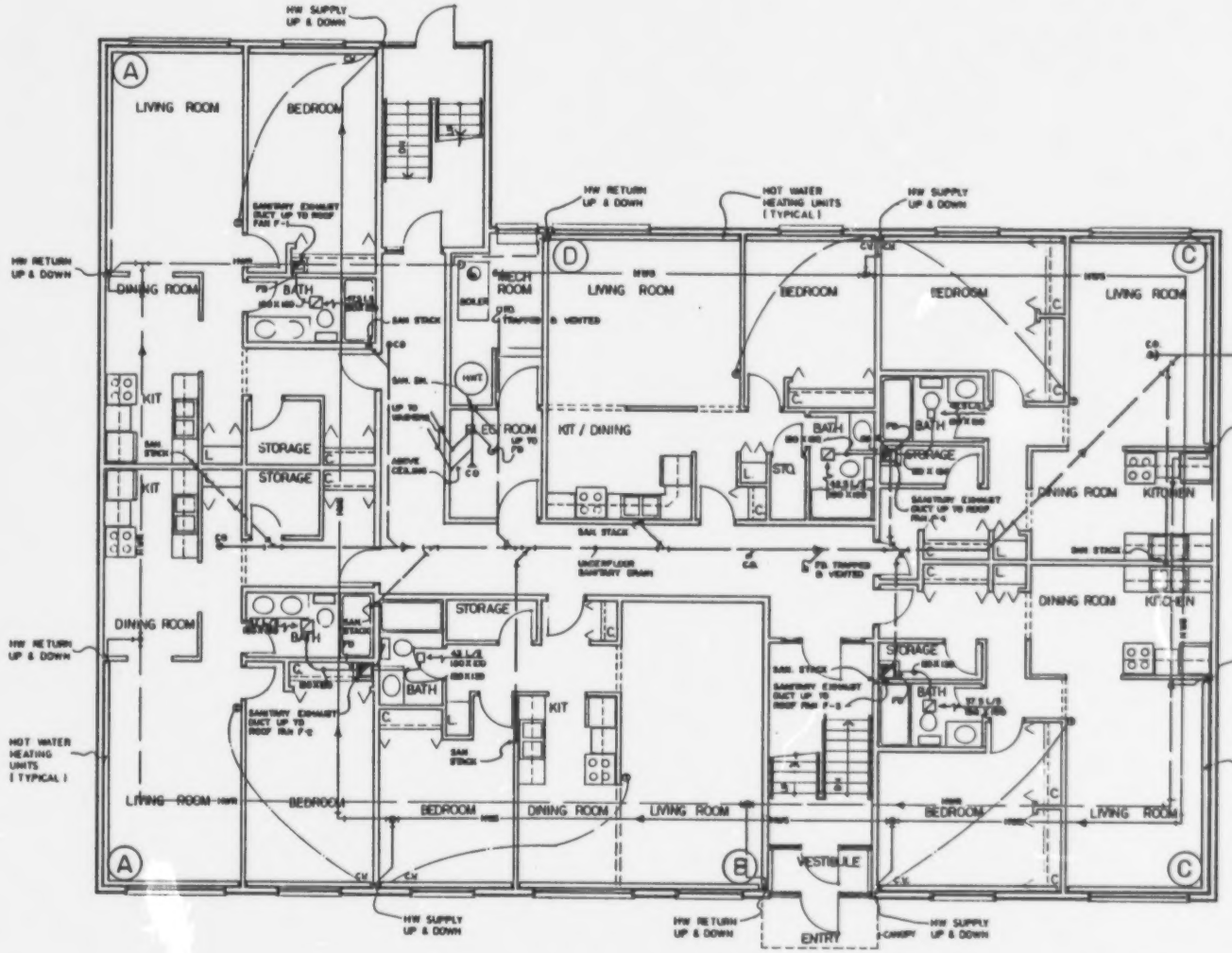
BEARING WALL CONSTRUCTION
- 1/2 HOUR FIRE RESISTANCE RATING
- 38 x 140mm OR 38 x 89mm WOOD STUDS @ 400mm O.C.
- 12.7mm TYPE X GYPSUM WALLBOARD, BOTH SIDES

NOTES
1. PROVIDE GALVANIZED STEEL, GA. #27mm AT THE HEAD OF ALL EXTERIOR OPENINGS.
2. WEEPING TILES SHALL BE LAID ON UNDISTURBED OR WELL-COMPACTED SOIL SO THAT THE TOP OF THE WEEPING TILE IS BELOW THE UNDERSIDE OF THE FLOOR SLAB.
3. ROOF TRUSSES SHALL BE DESIGNED IN CONFORMANCE WITH PART 4 AND FOR THE APPROPRIATE GROUND SNOW LOADS STATED IN TABLE 4.1.3.1. (STANDARD AS AT 1981)

ALBERTA HOUSE COST COMPARISON STUDY

SECTION & DETAILS

SCALES : AS SHOWN



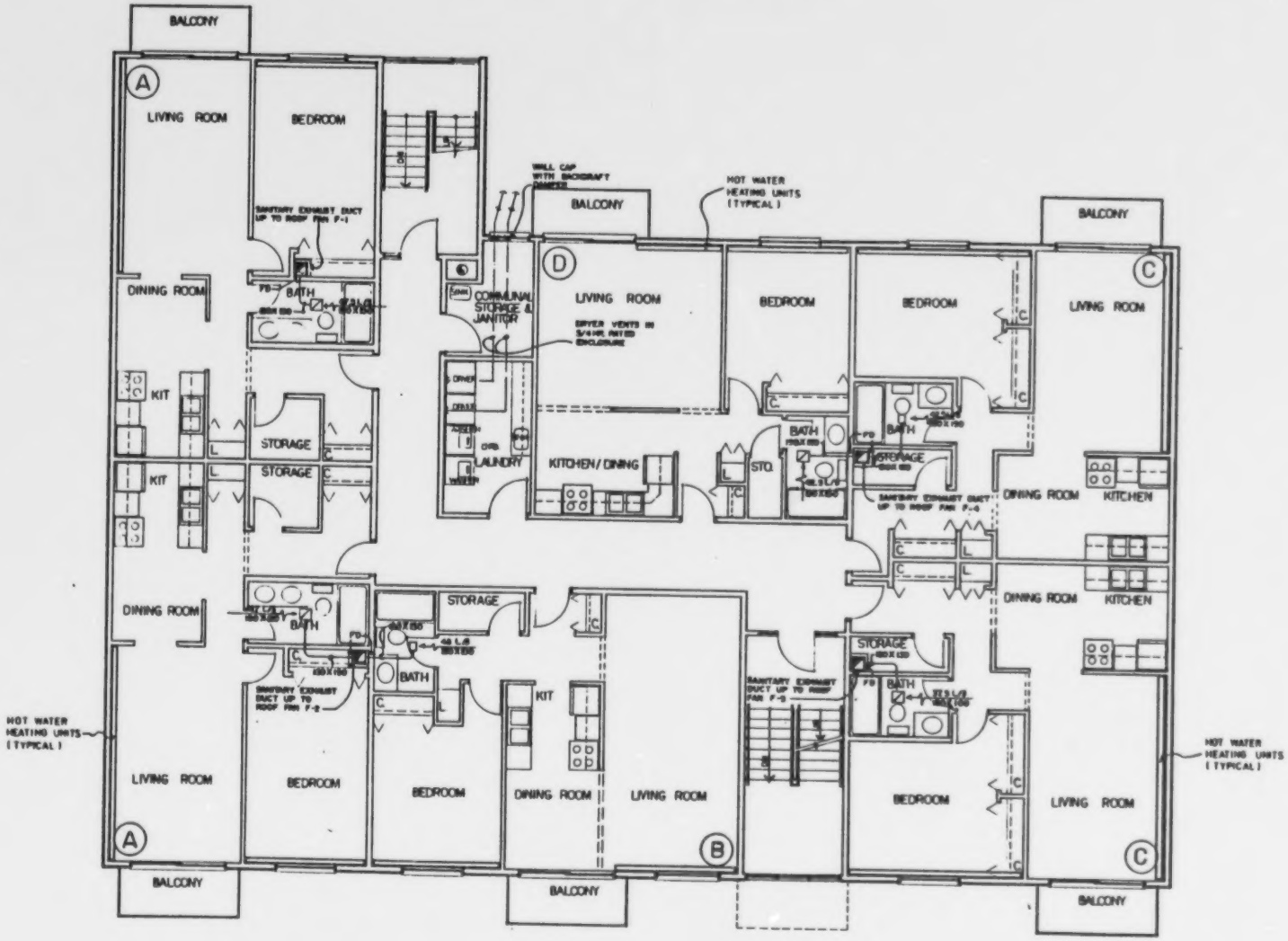
MECHANICAL NOTES

1. GAS FIRED HOT WATER HEATING BOILER SHALL BE INSTALLED IN ACCORDANCE WITH "THE GAS PROTECTION ACT AND REGULATIONS MADE PURSUANT TO THE ACT".
2. PROVIDE TYPE "B" CHIMNEY FOR BOILER.
3. PROVIDE ADEQUATE COMBUSTION AND VENTILATION AIR TO MECHANICAL ROOM.
4. ALL HEATING EQUIPMENT SHALL BE SIZED ON A CALCULATED HEAT LOSS FROM THE DWELLING UNIT SO AS TO MAINTAIN A TEMPERATURE OF 22°C INSIDE AT MAIN FLOOR WHEN OUTSIDE TEMPERATURE IS -36°C.
5. ALL HEATING AND PLUMBING PIPING SHALL BE NON-COMBUSTIBLE.
6. INSULATE ALL SANITARY EXHAUST DUCTS FROM UNDERSIDE OF ROOF TO 3RD FLOOR (2450mm).
7. PROVIDE A MINIMUM OF ONE WALL MOUNTED THERMOSTAT FOR EACH SUITE.
8. PROVIDE FIRE FLAPS ON EACH 150 x 150mm WASHROOM EXHAUST AIR GRILLE.
9. HEATING, VENTILATING AND AIR-CONDITIONING EQUIPMENT SHALL CONFORM TO THE APPROPRIATE REQUIREMENTS OF THE GAS PROTECTION ACT AND REGULATIONS MADE PURSUANT TO THAT ACT.
10. AIR FROM ONE SUITE SHALL NOT BE CIRCULATED TO ANY OTHER SUITE NOR TO A PUBLIC CORRIDOR.
11. AIR CONTAMINANTS RELEASED WITHIN BUILDINGS SHALL BE REMOVED INSOFAR AS POSSIBLE AT THEIR POINTS OF ORIGIN AND SHALL NOT BE PERMITTED TO ACCUMULATE IN UNSAFE CONCENTRATIONS.
12. SELF-CONTAINED MECHANICAL VENTILATION SYSTEMS, SUCH AS KITCHEN AND BATHROOM EXHAUST FANS (DRYING ONLY) DWELLING UNIT SHALL CONFORM TO THE REQUIREMENTS OF SECTION 9.33.

CV CONTROL VALVE
FD FIRE DAMPER

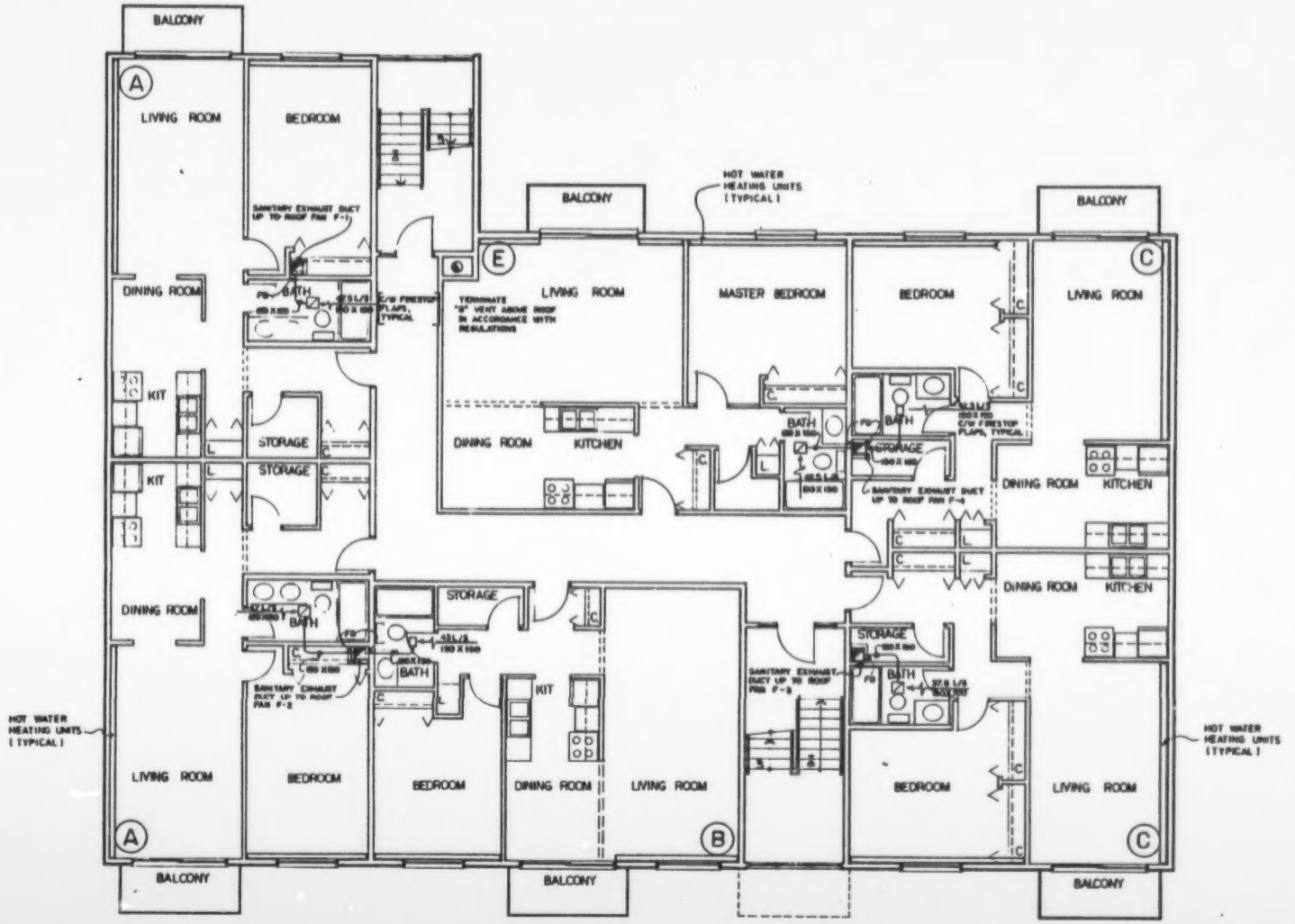
ALBERTA HOUSE COST COMPARISON STUDY

BASEMENT FLOOR PLAN
MECHANICAL LAYOUT
SCALE 1/8"



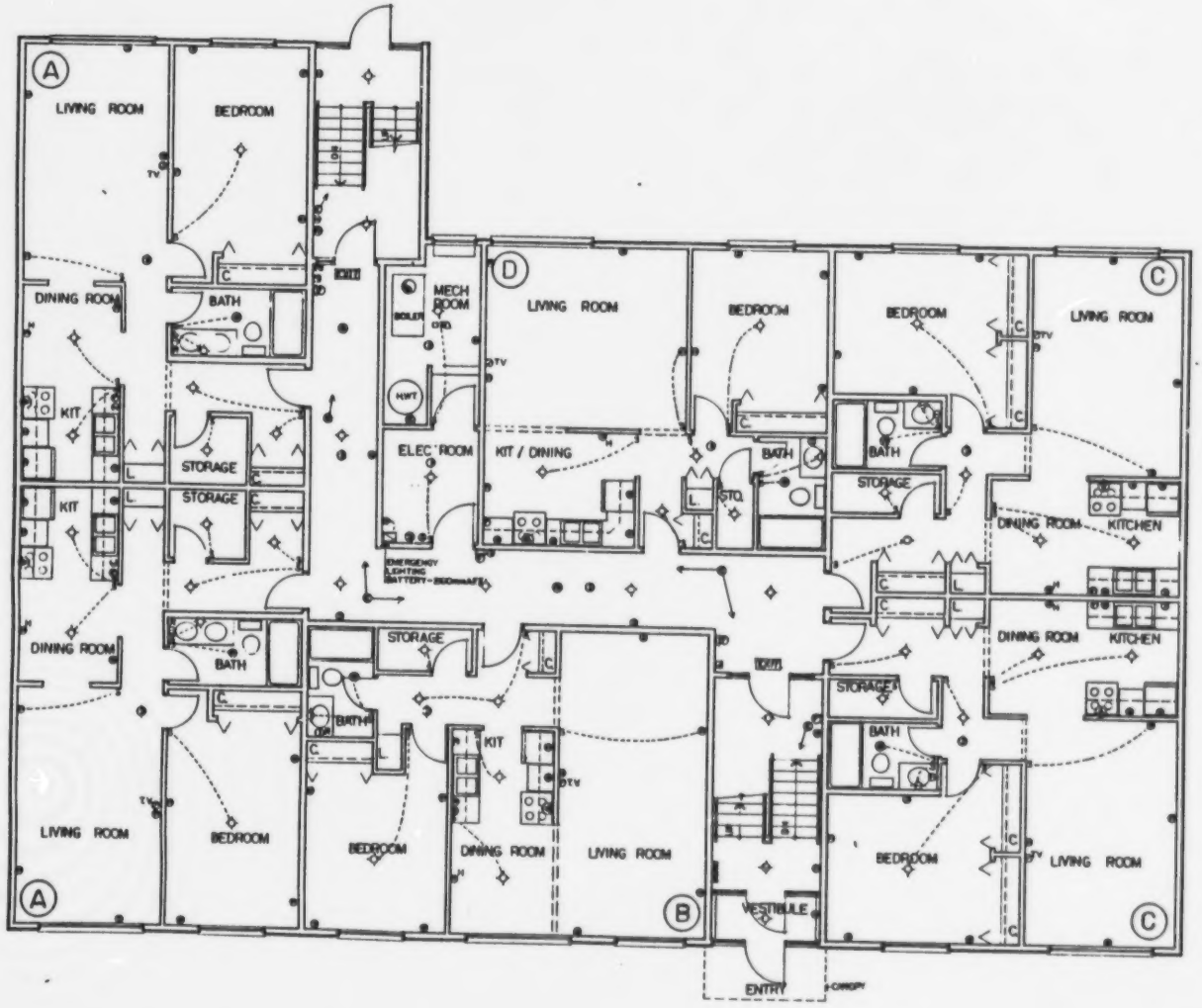
ALBERTA HOUSE COST COMPARISON STUDY

MAIN FLOOR PLAN
MECHANICAL LAYOUT
SCALE 1:50



ALBERTA HOUSE COST COMPARISON STUDY

2ND & 3RD FLOOR PLAN
MECHANICAL LAYOUT
SCALE 1:50

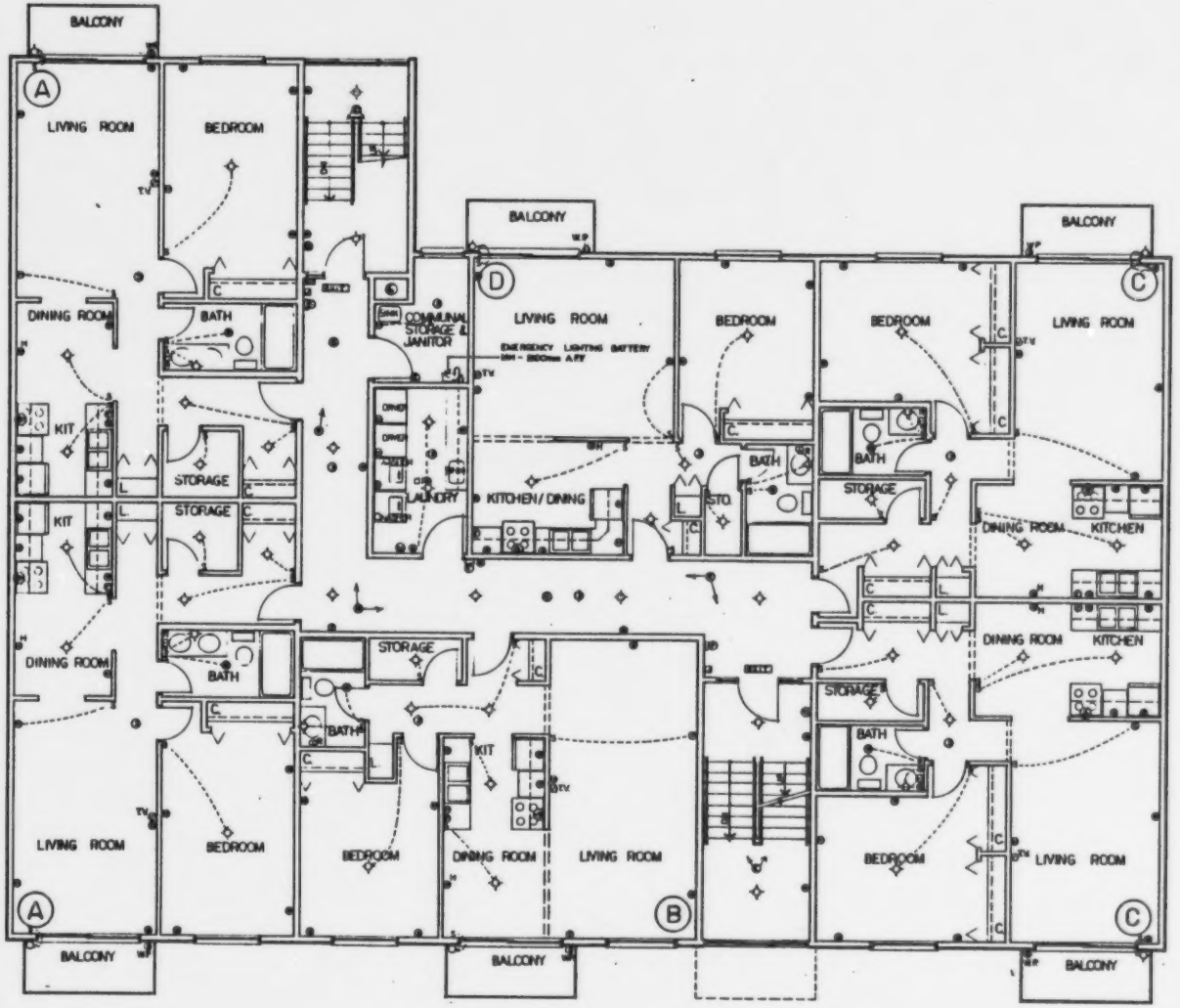


ELECTRICAL LEGEND

- EXIT LIGHTS WITH 2-25W - 120V AND 1-12V-15W EMERGENCY POWER SUPPLY
- EMERGENCY LIGHTING HEAD, 12V-12W
- EMERGENCY LIGHTING, 2 HEADS, 12V-12W
- SMOKE ALARM
- MANUAL FIRE ALARM STATION
- FIRE ALARM BELL, 254mm DIA-METER
- END-OF-LINE RESISTOR
- MASTER FIRE ALARM PANEL C/W ANNUNCIATOR AND GEL CELL BATTERY AND 120V POWER SUPPLY AND AUTOMATIC CHARGER. 1 ZONE PER FLOOR, 2 ZONES - STAIRS

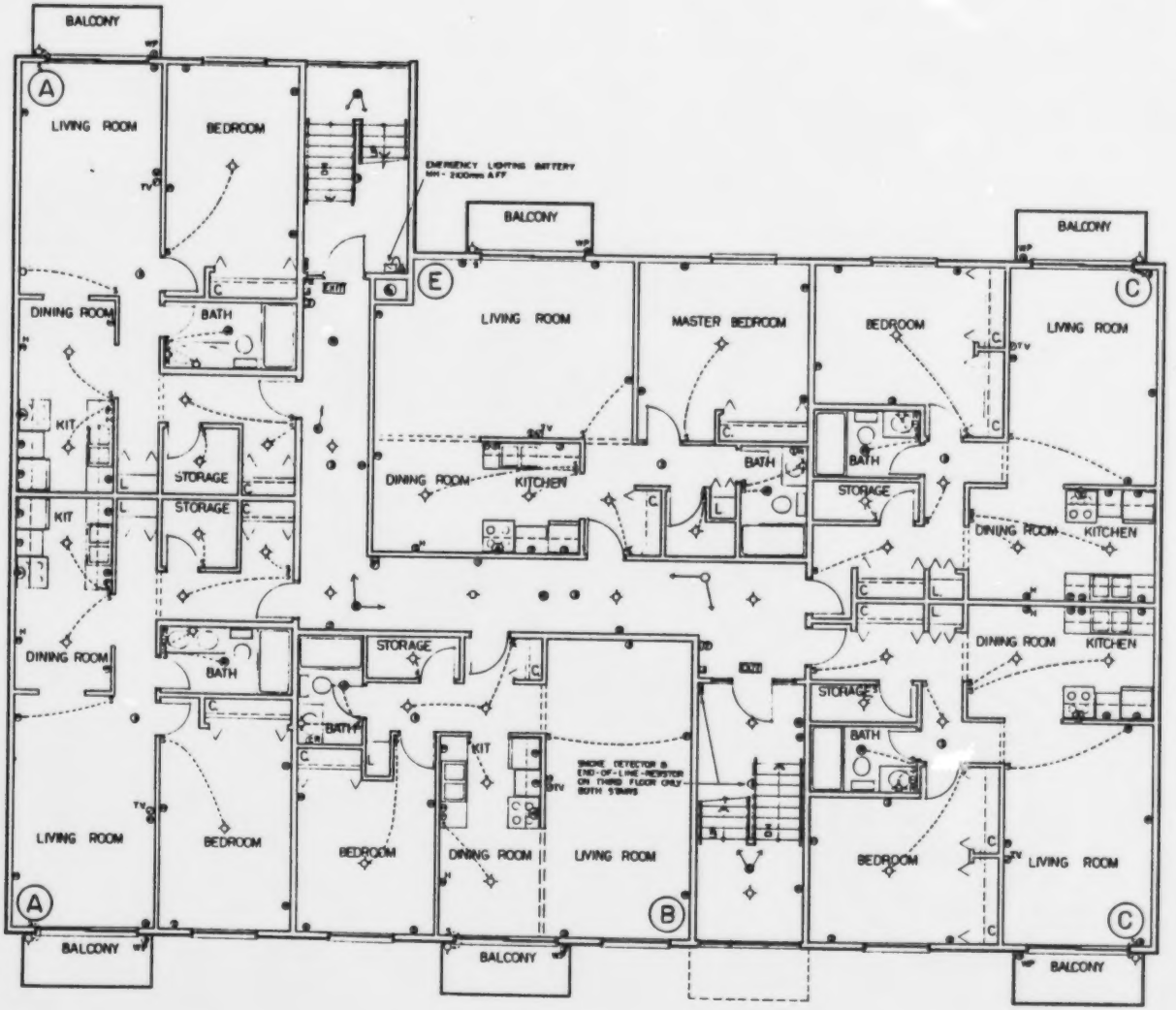
ALBERTA HOUSE COST COMPARISON STUDY

BASEMENT FLOOR PLAN
ELECTRICAL LAYOUT
SCALE 1:50



ALBERTA HOUSE COST COMPARISON STUDY

MAIN FLOOR PLAN
ELECTRICAL LAYOUT
SCALE 1:50



ALBERTA HOUSE COST COMPARISON STUDY

2ND & 3RD FLOOR PLAN
ELECTRICAL LAYOUT
SCALE 1:50